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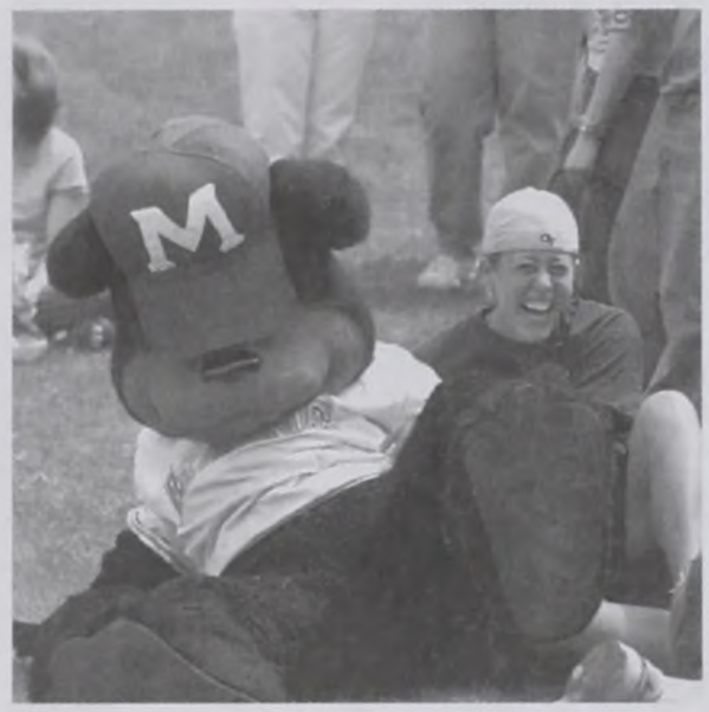
Undergraduate Catalog

2003 - 2004

One University with Many Faces



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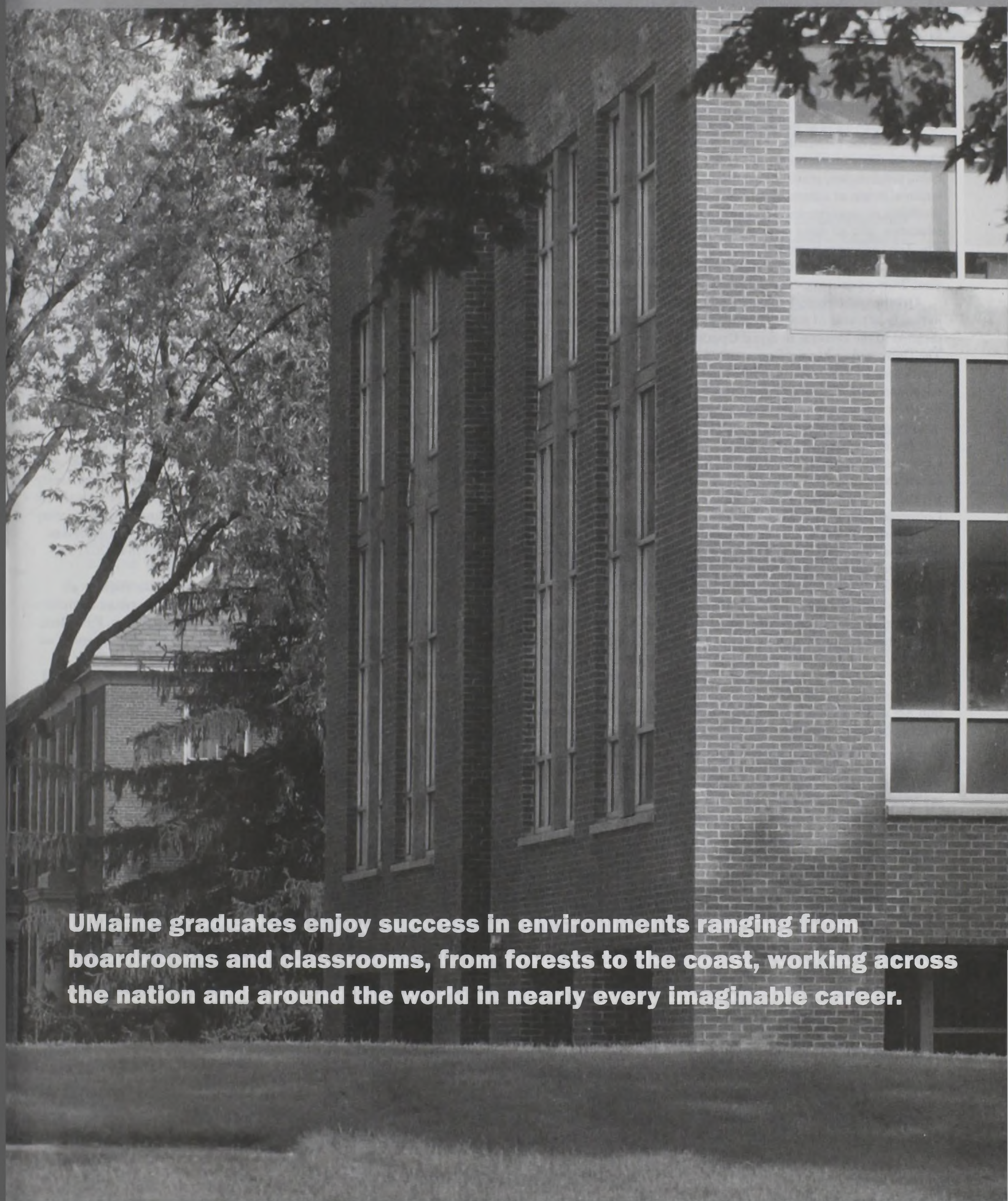
1865 THE UNIVERSITY OF MAINE

UMaine is quality. Period.

UMaine is the state's premier public university and is among the most comprehensive higher education institutions in the Northeast.



UMaine graduates enjoy success in environments ranging from boardrooms and classrooms, from forests to the coast, working across the nation and around the world in nearly every imaginable career.

Information in this Catalog covers the year 2003-2004

The University of Maine reserves the right to revise, amend, or change items set forth in the Catalog from time to time. Accordingly, readers of this Catalog should inquire as to whether any such revisions, amendments, or changes have been made since the date of the publication. The University of Maine reserves the right to cancel course offerings, to set the minimum and maximum sizes of classes, to change the 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.

Non-discrimination Notice

In complying with the letter and spirit of applicable laws and in pursuing its own goals of diversity, the University of Maine System 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, The University of Maine, Room 101, 5754 North Stevens Hall, Orono, ME 04469-5754, telephone (207) 581-1226 (voice and TDD). Inquiries or complaints about discrimination in employment or education may also be referred to the Maine Human Rights Commission. Inquiries or complaints about discrimination in employment may be referred to the U. S. Equal Employment Opportunity Commission.

Inquiries about the University's compliance with Title VI of the Civil Rights Act of 1964, which prohibits discrimination on the basis of race, color, and national origin; Section 504 of the Rehabilitation Act of 1973 and Title II of the Americans with Disabilities Act of 1990, which prohibit discrimination on the basis of disability; Title IX of the Education Amendments of 1972, which prohibits discrimination on the basis of sex; and the Age Discrimination Act of 1975, which prohibits discrimination on the basis of age, may also be referred to the U. S. Department of Education, Office for Civil Rights (OCR), Boston, MA 02109-4557, telephone (617) 223-9662 (voice) or (617) 223-9695 (TTY/TDD). Generally, an individual may also file a complaint with the OCR within 180 days of alleged discrimination.

Sexual Harassment Policy

Sexual harassment of either employees or students is a violation of federal and state laws. It is the policy of the University of Maine System that no member of the University System community may sexually harass another. In accordance with its policy of complying with non-discrimination laws, the University System will regard freedom from sexual harassment as an individual employee and student right which will be safeguarded as a matter of policy. Any employee or student will be subject to disciplinary action for violation of this policy.

In conformance with this policy, the University of Maine System will ensure fair and impartial investigations that will protect the rights of the person(s) filing sexual harassment complaints, the person(s) complained against, and the institution or unit. Retaliation against anyone who makes a complaint of sexual harassment or who is involved in a complaint process will not be tolerated.

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

To assure 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 System activity.

Definitions:

Unwelcome 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.

Questions, concerns and complaints about discrimination or harassment in any area of the University or about the application of laws and regulations related to equal opportunity and affirmative action should be directed to: Office of Equal Opportunity, The University of Maine, Room 101, 5754 North Stevens Hall, Orono, ME 04469-5754; (207) 581-1226 (voice and TDD).

The University of Maine requires all students to have no-charge e-mail accounts on its campus-wide intranet system, FirstClass. The University uses this e-mail system as an official means of communicating with its students. Students needing accounts should contact Information Technologies at 17 Shibles Hall (207) 581-2506.

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Message from the President

Welcome!

The University of Maine is unique in the state, offering the widest selection of high quality undergraduate and graduate degrees. Its research efforts continuously strengthen Maine's economy and quality of life. Its public service activities extend the boundaries of the campus to the boundaries of the state. Created by the Morrill Act that was signed by Abraham Lincoln, the university was officially founded in 1865 as a Land Grant University; and it has grown to be Maine's flagship university.

If you have chosen to study at the University of Maine, you have access to the broadest array of academic programs the state has to offer. Whether you are studying science, engineering, arts, humanities, social sciences, or professional studies, you can expect to be challenged to high achievement. You can expect small classes, opportunity for close interaction with outstanding professors, hands-on experiential learning, cutting-edge technology, and opportunities to work in teams. Your education will be as exacting and productive as you choose to make it.

The Undergraduate Catalog is a tool that can open up a world of learning opportunity. Used in conjunction with regular advising, it will lead you to the choices and options that make American higher education unique in the world. Take time to learn the contents of the catalog. Knowing the requirements for your degree and your major can save you time, lead you to the best courses for your academic needs, and help you focus your studies. Knowing the choices that exist can help you plan and select the best options. If you have questions about your course of study, talk to your advisor, your professors, and your department chair. They are here not only to teach the individual courses that make up your program, but to help you fit them into a complete pattern of learning.

Remember that your major is only one part of your degree program. Your best bet is to surround it with courses in other departments that complement and reinforce the major. Take advantage of elective courses to fill out a complete program of study, and discover, like many who have come before you, the unexpected joy of studying a subject you never thought would interest you. Most people today can expect to change their career plans several times over the course of a lifetime, and everyone will spend more time with family, civic responsibilities, and leisure than they will in their workplace. So a complete, well-rounded course of study that helps prepare you for the unexpected turns of the future, and that leads to a lifetime of learning, is the best option.

I hope that you will enjoy your time at the University of Maine and find, like most of our alumni, that your years here are among the very best of your life. We at the University of Maine are glad you are here. We stand ready to serve you any way we can.

Sincerely,

Peter S. Hoff
President

Academic Calendars

Fall 2003 - Spring 2004

Fall Semester 2003

Classes begin	Tuesday, September 2, 8:00 a.m.
Add/Drop week	Tuesday-Monday, September 2-8
End of 1st 3rd of semester for withdrawals	Thursday, October 2, 4:30 p.m.
Fall break begins	Friday, October 10, 5:00 p.m.
Classes resume	Wednesday, October 15, 8:00 a.m.
Application for Degree filing deadline (Dec.)	Wednesday, October 15, 4:30 p.m.
End of 2nd 3rd of semester for withdrawals	Thursday, November 6, 4:30 p.m.
Registration for Spring 2004	Wednesday-Friday, November 12-21
Thanksgiving break begins	Wednesday, November 26, 8:00 a.m.
Classes resume	Monday, December 1, 8:00 a.m.
Classes end	Friday, December 12, 5:00 p.m.
Final exams begin	Monday, December 15, 8:00 a.m.
Final exams end	Friday, December 19, 6:00 p.m.

Spring Semester 2004

Classes begin	Monday, January 12, 8:00 a.m.
Add/Drop week	Monday-Friday, January 12-16
No classes on Martin Luther King, Jr. Day	Monday, January 19
End of 1st 3rd of semester for withdrawals	Thursday, February 12, 4:30 p.m.
Application for Degree filing deadline (May)	Monday, February 16, 4:30 p.m.
Spring recess begins	Friday, February 27, 5:00 p.m.
Classes resume	Monday, March 15, 8:00 a.m.
End of 2nd 3rd of semester for withdrawals	Tuesday, March 30, 4:30 p.m.
Registration for Fall 2004	Tuesday-Thursday, March 30-April 8
Maine Day	Wednesday, April 28
Classes end	Friday, April 30, 5:00 p.m.
Final exams begin	Monday, May 3, 8:00 a.m.
Final exams end	Friday, May 7, 6:00 p.m.
Commencement	Saturday, May 8, 10:30 a.m.

Summer Session 2004

I. May Term

1. Day Schedule - May 10 - May 28
2. Evening (8 week) Schedule - May 10 - July 2

II. Summer Session

3. Five Week Schedule - May 31 - July 2
4. Evening (8 week) Schedule - May 31 - July 23
5. Six Week Schedule - May 31 - July 9
6. Three Week Schedule - May 31 - June 18
7. Three Week Schedule - June 7 - June 25
8. Evening (8 week) Schedule - June 14 - August 6
9. Three Week Schedule - June 14 - July 2
10. Five Week Schedule - July 6 - August 6
11. Three Week Schedule - June 21 - July 9
12. Six Week Schedule - July 12 - August 20
13. Three Week Schedule - July 6 - July 23
14. Three Week Schedule - July 12 - July 30
15. Miscellaneous and Special Projects - May 10 - August 20
16. Independent Study, Co-Op Ed, etc. May 10 - August 20
17. On-Line Courses, May 10- August 20
18. Statewide Television & Compressed Video Seven Week Schedule - May 17- July 2
19. Statewide Television & Compressed Video Seven Week Schedule - July 6- August 20

Academic Calendars

Fall 2004 - Spring 2005

Three Week Schedules

1. May 10- May 28 (May Term)
6. May 31 - June 18
7. June 7 - June 25
9. June 14 - July 2
11. June 21 - July 9
13. July 6 - July 23
14. July 12 - July 30

Five Week Schedules

3. May 31 - July 2
10. July 12 - August 6

Six Week Schedules

5. May 31 - July 9
12. July 12 - August 20

Seven Week Schedules

Statewide Television & Compressed Video

18. May 17 - July 2
19. July 6 - August 20

Evening (Eight-Week) Schedules

2. May 10 - July 2
4. May 31 - July 23
8. June 14 - August 6

Holidays (no classes)

Monday, May 24, 2004 - Memorial Day Observed
Monday, July 5, 2004 - Independence Day Observed

Fall Semester 2004

Classes begin	Monday, August 30, 8:00 a.m.
Add/Drop week	Monday-Friday, August 30-September 3
Labor Day no classes	Monday, September 6
End of 1st 3rd of semester for withdrawals	Thursday, September 30, 4:30 p.m.
Fall break begins	Friday, October 8, 5:00 p.m.
Classes resume	Wednesday, October 13, 8:00 a.m.
Application for Degree filing deadline (Dec.)	Friday, October 15, 4:30 p.m.
End of 2nd 3rd of semester for withdrawals	Thursday, November 4, 4:30 p.m.
Registration for Spring 2005	Tuesday-Friday, November 9-19
Thanksgiving break begins	Wednesday, November 24, 8:00 a.m.
Classes resume	Monday, November 29, 8:00 a.m.
Classes end	Friday, December 10, 5:00 p.m.
Final exams begin	Monday, December 13, 8:00 a.m.
Final exams end	Friday, December 17, 6:00 p.m.

Spring Semester 2005

Classes begin	Monday, January 10, 8:00 a.m.
Add/Drop week	Monday-Friday, January 10-14
No classes on Martin Luther King, Jr. Day	Monday, January 17
End of 1st 3rd of semester for withdrawals	Thursday, February 10, 4:30 p.m.
Application for Degree filing deadline (May)	Tuesday, February 15, 4:30 p.m.
Spring recess begins	Friday, February 25, 5:00 p.m.
Classes resume	Monday, March 14, 8:00 a.m.
End of 2nd 3rd of semester for withdrawals	Monday, March 29, 4:30 p.m.
Registration for Fall 2005	Tuesday-Thursday, March 29-April 7
Maine Day	Wednesday, April 27
Classes end	Friday, April 29, 5:00 p.m.
Final exams begin	Monday, May 2, 8:00 a.m.
Final exams end	Friday, May 6, 6:00 p.m.
Commencement	Saturday, May 7, 10:30 a.m.

General Information

The University of Maine

The University of Maine is one of the nation's major public institutions of higher education, but built on a human scale. Its five undergraduate colleges together enroll about 8,800 students, and its graduate school enrolls about 2,300 students seeking masters or doctoral degrees. The University of Maine is Maine's center for research and graduate education. In addition to its 91 baccalaureate degree programs, it offers 62 masters and 25 doctoral programs that attract students from around the world, helping to create a cosmopolitan university environment in a rural New England setting. The University of Maine is a place of discovery. The research and scholarship of its approximately 800 faculty members and 2,300 graduate students greatly enrich the undergraduate classroom. This spells the difference between a true university, where students learn by being caught up in the creation of knowledge, and other types of schools where research is not performed.

The University of Maine enjoys an ideal physical setting on the banks of the Stillwater River (a branch of the Penobscot) in Orono, Maine. It is ten minutes from Maine's third largest city (Bangor) and an international airport. It is also adjacent to an interstate highway (I 95), only an hour from Bar Harbor and Acadia National Park, and within an easy drive of several major ski resorts. And yet, despite these convenient travel connections, it sits at the edge of the last great expanse of undeveloped lakes, forests, and streams in the Northeast.

The University of Maine has a rich heritage. The Maine legislature established it in 1865 under the provisions of the land-grant act signed by President Abraham Lincoln. That law gave federal lands to each state that would agree to use the income from those lands to establish what was then a new kind of educational institution, one dedicated to educating the sons of average citizens in "agriculture and the mechanic arts". In the 137 years since its founding the University of Maine has grown far beyond its original focus on agriculture and engineering, and today enrolls slightly more women than men. Two of its colleges, Engineering and Natural Sciences, Forestry and Agriculture, still embody elements of its original mission, but tailored to meet the needs of the 21st century through programs like computer and electrical engineering and molecular biology. The University's three other colleges - Education and Human Development, Liberal Arts and Sciences, and Business, Public Policy and Health - offer programs undreamed-of in 1865: studio art, computer science, business administration, elementary education, child development and family life, social work, communication sciences and disorders - and the list could go on and on.

The University of Maine remains true to its land-grant heritage in yet another important way: it is committed to public service and to improving the quality of human life. Its faculty members, its staff members, and its undergraduate and graduate students all contribute to improving our society through research, education, and direct community service. By enrolling at the University of Maine students are committing themselves to working for a better, more just, more tolerant society.

The University of Maine is not just a place to prepare yourself for a good JOB: it is that, but it's also a place to prepare yourself for a rich and fulfilling LIFE. The curriculum helps with part of this preparation. Each program is based upon a foundation in the liberal arts to ensure that University of Maine graduates are broadly educated persons who can contribute in many ways beyond their technical expertise. But a big part of this liberalizing education takes place outside the classroom by immersion in a university community that celebrates the arts, treasures the truth, defends freedom of thought and expression, and cherishes human racial, ethnic, and cultural diversity.

The University of Maine enjoys overall institutional accreditation by the New England Association of Schools and Colleges, Inc., the oldest regional accrediting association in the United States. Many professional societies also confer accreditation or approval on specific University of Maine programs. Among these are:

- AACSB - The International Association for Management Education (Programs in Business Administration)
- The Accreditation Board of Engineering and Technology, Inc. (All baccalaureate programs in Engineering and in Engineering Technology)
- The American Chemical Society (The BS and BA in Chemistry)
- The American Dietetic Association (Baccalaureate and masters programs in Food Science and Human Nutrition)
- The American Psychological Association (Doctoral program in Psychology)
- The American Speech-Language-Hearing Association (Graduate programs in Communication Sciences and Disorders)
- The Commission on Collegiate Nursing Education (BS in Nursing)
- The Computing Sciences Accreditation Board (BS in Computer Science)
- The Council on Social Work Education (All programs in Social Work)
- The National Association of Schools of Music (Programs in the School of Performing Arts)
- The National Association of Schools of Public Affairs and Administration (Masters program in Public Administration)
- The National Council for Accreditation of Teacher Education (All programs in Education)
- The Society of American Foresters (All programs in forestry)
- The Society of Wood Science and Technology (BS in Wood Science and Technology)

Attending the University

Admission

The University seeks candidates whose academic credentials, scholastic achievement and motivation indicate promise for success in its programs. Applications from prospective degree candidates are considered without regard to race, color, creed, sex, national origin, handicap or age. The University of Maine belongs to the National Association for College Admission Counseling, and as such subscribes to the Statement of Principles of Good Practice.

Visiting the Campus

All prospective students are encouraged to visit the University of Maine to take a campus tour, to meet with an admission counselor or faculty member, and to experience the university first-hand. The Office of Admission and the Visitors' Center are located in Chadbourne Hall at the south entrance to campus. In addition to several daily tours during the business week, numerous open houses and Saturday information sessions are also offered. To learn more or to schedule a visit, please contact the Visitors' Center at (207) 581-3740 or Admissions toll-free at 1-877-4UM-ADMIT (486-2364), or via e-mail at um-admit@maine.edu.

Academic Entrance Requirements

Academic course requirements for admission to the University are established by each of the five undergraduate colleges (see chart). Students are expected to complete a college preparatory curriculum with well-developed skills in writing, reading comprehension, reasoning, mathematics, the natural sciences, history and social sciences, foreign languages and the fine arts. Applications are reviewed for entrance into the major selected on the application, or second choice major if the student is not eligible for admission to her/his first choice.

Candidates no longer in 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.

Applying for Admission

Application forms are available from many high school guidance offices, or by contacting the Office of Undergraduate Admission, 5713 Chadbourne Hall, Orono ME 04469-5713, telephone (207) 581-1561. You may call toll-free at 877-4-UM-ADMIT (486-2364), contact us by FAX at (207) 581-1213, or by e-mail at um-admit@maine.edu. You may also download an application form or apply electronically by contacting our website (www.umaine.edu). The University of Maine is a member of the Common Application Group and accepts the common application available at www.commonapp.org.

Permanent Resident Candidates

Candidates who are permanent residents of the United States, holding 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.

Academic Requirements for Admission

The required high school academic course of study, combined with academic electives, should equ at least 17 credits. For foreign language requirements, the two years of study must be in the same language. Two years of American Sign Language (ASL) may be used to satisfy this requirement for admission.

		Entrance Requirements *(in years)*										
Degree	College/School	*English*	*Algebra I&II*	*Geometry*	*Senior Math**	*Foreign Lang.*	*Lab Biology*	*Lab Chemistry*	*Lab Physics*	*History/Social Sciences*	*Computer Sciences*	*Fine Arts*
B.A./B.S.	BUSINESS, PUBLIC POLICY & HEALTH											
	B.S. Business Administration	4	2	1	1	2	2 lab sciences			2	S-1	S-1
	B.S. Nursing	4	2	1			1	1		2	S-1	S-1
	B.A. Public Management	4	2	1		2	1 lab science			2	S-1	S-1
	B.S. Social Work	4	2	1		2	1 lab science			2	S-1	S-1
B.S.	SCHOOL OF NURSING	4	2	1			1	1		2	S-1	S-1
B.S.	EDUCATION & HUMAN DEVELOPMENT *(requires 1 year of physical education for its education majors)*	4	2	1		2	1	1 lab science		2	S-1	S-1
B.S.	ENGINEERING	4	2	1	1			1	1	2	S-1	S-1
B.S.	School of Engineering Technology	4	2	1	1			S-1	1	2	S-1	S-1
B.A.	LIBERAL ARTS & SCIENCES	4	2	1		2	1	1 lab science		2	S-1	S-1
B.S.	LIBERAL ARTS & SCIENCES *(requires 2 years of the same foreign language for its B.A. programs)*	4	2	1	1		3 lab sciences			2	S-1	S-1
B.A./B.S.	NATURAL SCIENCES, FORESTRY, & AGRICULTURE *(requires 2 years of the same foreign language for its B.A. programs)*	4	2	1	S-1	1	1 lab science			2	S-1	S-1
	ACADEMIC & CAREER EXPLORATION (ACE) PROGRAM	4	2	1	S-1	S-2	2 lab sciences			2	S-1	S-1

*Select from trigonometry, pre-calculus, calculus.

Key: S=Strongly Recommended

Please refer to individual undergraduate catalog listings and/or Academic Program Sheets for more specific degree entrance requirements.

Permanent residents should use the regular undergraduate application. Permanent residents for whom English is not their first language may be required to take the TOEFL or ELPT. This will be evaluated on a case by case basis depending upon the number of years the student has lived in the United States and fluency in the English language.

Rolling Admission and Recommended Filing Dates

The Office of Admission reviews applications on a rolling basis. While applications are accepted throughout the admission cycle, first-year applicants for fall semester entrance are encouraged to apply by February 1 to receive full consideration for financial aid. Spring semester applicants should apply by December 1.

Please be aware that the later an application is received, prospects for admission to the program of choice may be restricted due to enrollment limits. Similarly, housing and financial aid requests are considered based on space and funding availability.

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 that also reflects graduation. The University reserves the right to rescind a decision if the applicant fails to graduate from high school (or its equivalent), or if the student's academic performance fails to meet university admission standards.

Admission Categories

First-year Students

Students applying directly from high school, and adult, non-traditional students who have never attended college, are considered first-year applicants.

In addition to the admission application and required $40 fee, students must submit official high school transcripts, results from the SAT or ACT standardized test*, and a letter of recommendation from their guidance counselor.

Home-schooled students must also submit the necessary documents, replacing the high school transcript with a listing of coursework completed and competency level achieved. All home-school applicants must submit official results from the General Equivalency Diploma (GED) to certify the completion of high school or its equivalent.

*not required of applicants who have earned 12 or more college credits, or applicants who are at least 20 years of age at the time of application and who have never attended a post secondary institution.

Transfer Applicants

Candidates applying for transfer from other colleges or universities are encouraged to apply by December 1 for spring admission and March 1 for fall admission. Generally, students who have earned a grade point average of 2.00 on a 4.00 scale from accredited colleges or universities, and have met academic course requirements, are accepted as transfer students. Exceptions to this standard may include candidates who have completed only a minimal level of college coursework and/or present a marginal high school record, and students applying to selected programs in the University having more competitive entrance criteria.

Along with the application and required fee, transfer students must submit official transcripts of all attempted college-level coursework. Students who have successfully completed 12 credits of college work are not required to submit SAT or ACT scores.

Transfer credit is awarded through the dean's office of the college to which the student has been admitted. Please refer to the Transfer Policy section in this catalogue (see index) for complete information on the University's policies for awarding transfer credit.

Students who have a financial indebtedness at other colleges or universities, and thus are unable to obtain official transcripts, will not be considered for admission until such documents have been received. Students seeking admission after a dismissal or suspension from other institutions must include with their applications written petitions that provide clear and convincing reasons to justify admission that would negate the likelihood of a repetition of the conduct or conditions which led to the dismissals or suspensions.

Nursing Transfer Students

A student transferring from a baccalaureate nursing program to the School of Nursing baccalaureate program is required to provide a letter of reference from a faculty member teaching in the student's most recently attended completed semester and a statement from the head of the nursing program stating that the student is in good standing. These materials are to be mailed directly to the School of Nursing (The University of Maine, School of Nursing, 5724 Dunn Hall, Room 217, Orono, ME 04469) from the originating institution.

Readmission

Former University of Maine degree candidates planning to return to the campus to resume undergraduate work must first contact the academic dean of the undergraduate college in which enrollment is sought. Candidates will be notified by the dean's office of the readmission decision.

Reactivation

Students who previously applied to the University but did not enroll within two years of the original date of application may request a reactivation of their application by contacting the Office of Admission. A $20.00 application fee is required. Students must provide official transcripts of all academic work that has been attempted since the application was first filed.

Early Admission (high school juniors)

Upon the recommendation of high school principals and guidance counselors, the University will consider candidates who have demonstrated outstanding academic achievement and whose motivation and maturity reflect a strong desire to pursue University degree programs. Candidates must have completed a minimum of three years of college preparatory work in high school and submit test results from either the Scholastic Assessment Test I or the ACT examination. Candidates are requested to arrange on-campus interviews and will also be required to have the support and endorsement of their parents or legal guardians. High school students who enter the University of Maine prior to graduation from high school are not eligible for Federally funded financial aid.

Deferred Admission

Approved degree candidates may defer University enrollment for up to one year from the offer of admission. The intent of this delayed 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 enroll at any other college, university, or post-graduate year of secondary school study. Candidates approved for deferred admission will be required to submit a non-refundable deposit of $150 which will be held on account by the University Bursar's Office. The request to defer enrollment must be made in writing to the Office of Admission prior to August 1 for fall semester enrollment and prior to January 1 for spring semester enrollment.

Deferred Enrollment (Active Military Duty)

The University of Maine participates in the Concurrent Admission Program (ConAP) administered by the U.S. Army Recruiting Command. This option allows eligible soldiers to defer their enrollment at the University while serving active duty

enlistment. Requests for military deferred enrollment will be considered on an individual basis. Requests must be received by August 1, for candidates who applied for the fall semester and by January 1 for spring semester candidates.

Accepting the Offer of Admission - Enrollment Deposit

Students accepted to the University of Maine for fall entrance must submit a $150 enrollment deposit by May 1 (students depositing before May 1 may request a refund until April 30). Students accepted after May 1 must submit the non-refundable $150 enrollment deposit within two weeks of notification. The enrollment deposit is credited to the student's account in the University Bursar's Office. Students accepted to the University of Maine for the spring semester are requested to submit a $150 non-refundable enrollment deposit by January 1 or two weeks from the date of acceptance if the acceptance is later than January 1.

The UMaine Four-Year Guarantee

The University of Maine guarantees that the courses needed to complete a baccalaureate degree program comprised of 120 credits will be available on a schedule enabling students studying full time (15 credits each semester) to finish the program in four years. If at the completion of four years it fails to meet that pledge, the University promises that students can take the UMaine courses necessary to complete graduation requirements tuition-free. Students, too, need to do their part to graduate in four years, which includes meeting regularly with an academic advisor to select courses, and passing all courses at the required grade level. Details of the four-year guarantee program are available from the Associate Vice President for Academic Affairs, 5703 Alumni Hall, Orono, ME 04469-5703.

New England Regional Student Program**

Qualified New England residents are given preferred consideration at other state institutions in degree programs unavailable in their home state. Students are charged in-state tuition plus a 50 percent surcharge. Residents of states marked with an "X" are eligible for the RSP tuition break at The University of Maine in the programs listed below.

Major (subject to review & change)	CT	MA	NH	RI	VT
Agribusiness Administration	X	X		X	X
Aquaculture	X	X			X
Biological Engineering	X	X	X	X	X
Botany		X			
Chemical Engineering					X
Construction Management Technology			X	X	X
Electrical Engineering Technology	X			X	X
Engineering Physics				X	X
Financial Economics					X
Food Science & Human Nutrition			X	X	
Forestry	X			X	
Forest Ecosystem Science				X	
Forest Operations Science	X	X		X	X
Information Systems Engineering	(subject to review by NEBHE)				
Landscape Horticulture			X		
Latin	X			X	
Marine Sciences	X				X
Mechanical Engineering Technology		X		X	X
New Media	X		X		X
Parks, Recreation & Tourism		X		X	
Public Management	X	X		X	
Pulp & Paper Technology*	X	X	X	X	X
Surveying Engineering Technology	(subject to review by NEBHE)				
Sustainable Agriculture	X	X	X		
Wood Science & Technology	X	X	X	X	X

**Includes 5-year certificate in Pulp & Paper Technology*

***Listing is current as of March 15, 2003. Confirm availability with your school counselor or by visiting www.nebhe.org*

New England Regional Student Program

Qualified New England residents are given preferred admission consideration to the University of Maine in specific academic programs not available in their home states. Students accepted in these programs pay 150% of the Maine in-state rate rather than the normally charged out-of-state tuition.

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

Eligible 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 Office of Student Records, Wingate Hall, Room 201, at the University. Tuition reduction under the regional program takes effect the semester following notification. Students who change their majors to non-eligible programs, will be charged full non-resident tuition.

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 (www.nebhe.org).

International Student Admission

The University of Maine welcomes applications from international students as first-year applicants or transfers. The Office of International Programs is the admissions office for undergraduate international applicants. A separate international student application is required and may be obtained from the Office of International Programs, 5782 Winslow Hall, Room 100, The University of Maine, Orono ME 04469-5782 or by downloading from the University's website (www.umaine.edu). The telephone number of the Office of International Programs is (207) 581-2905. The email address for an application or admission questions is umintadm@maine.edu.

Candidates are required to submit the completed application, an application fee of $40.00 payable by check, money order or

bank draft in US dollars, official results of TOEFL (if English is not the candidate's native language), and official copies of transcripts, grade reports, etc., with certified English translations. Educational records must include subjects studied by year, grades or marks or percentage earned in year-end examinations, as well as copies of diplomas, degrees or certificates, and a description of the grading system. The SAT is suggested but not required. The Office of International Programs alerts students when they are academically admissible to the University. Financial documentation must then be forwarded and approved before immigration documents and the official admission letter are sent. Financial documents include original bank statements and official affidavits of support and must be less than one year old. These must be accompanied by an English translation as well.

Transfer students who have studied in the United States for at least two years are not required to submit a TOEFL score. Transfer students outside the U.S. must submit a TOEFL score of 530 for regular admission, and professionally evaluated transcripts. Suggested evaluation services are listed in the University of Maine International Application.

International applicants are urged to start the admission process early. The Office of International Programs reviews applications as they are received. To ensure living space on campus, the suggested deadline for Fall admission is no later than May 1.

International Students and their dependents MUST have appropriate medical health insurance that meets limits established and required by the University of Maine.

TOEFL and Conditional Admission

The University of Maine requires a minimum of 530 on the Test of English as a Foreign Language (TOEFL) for regular admission. The corresponding minimum on the computer-generated TOEFL is 197. Those students who are otherwise academically admissible, but who lack the 530 on TOEFL may be conditionally admitted. Conditional admission requires the student to take English language courses at the University's Intensive English Institute until 530 on TOEFL is achieved, or the student is deemed proficient in English by the Intensive English Institute.

Advanced Placement Credit Table

AP Exam	Score			UMaine Course	Credits
Art *(drawing/studio)*				based on portfolio review	
Art History				no credit given	
Biology	3			BIO100	4
Biology		4	5	BIO100/BIO200	8
Calculus AB	3	4	5	MAT126	4
Calculus BC	3	4	5	MAT126/127	8
Chemistry	3	4	5	CHY121/123 & 122-124	8
Computer Science A	3	4	5	COS120	3
Computer Science AB	3	4	5	COS120/1XX	6
Economics-Micro	3	4	5	ECO120	3
Economics-Macro	3	4	5	ECO121	3
English *(lang., comp./lit., comp.)*	3			ENG101	3
English *(lang., comp./lit., comp.)*		4	5	ENG101/131	6
Environmental Sciences	3	4	5	EES100	3
Foreign Lang.-French Lang.	3	4	5	FRE205/206	6
Foreign Lang.-French Lit.	3	4	5	FRE209	3
Foreign Lang.-German Lang.	3	4	5	GER203/204	6
Foreign Lang.-Latin Lit.	3	4	5	LAT453	3
Foreign Lang.-Latin, Virgil	3	4	5	LAT481/482	6
Foreign Lang.-Spanish Lang.	3	4	5	SPA205/206	6
Foreign Lang.-Spanish Lit.	3	4	5	SPA307/308	6
Gov't/Politics, U.S.	3	4	5	POS100	3
Gov't/Politics, Comparative	3	4	5	POS241	3
History, European	3	4	5	HTY105/106	6
History, U.S.	3	4	5	HTY103/104	6
History, World	3	4	5	HTY1XX	3
Human Geography	3	4	5	GEO201	3
Music Listening/Literature	3	4	5	by special arrangement	
Music Theory	3	4	5	MUY101/120	3
Music Theory			5	by special arrangement	4
Physics B	3	4	5	PHY111/112	8
Physics C-Mechanics	3	4	5	PHY121	4
Physics C-Elec./Magnetism	3	4	5	PHY122	4
Psychology	3	4	5	PSY100	3
Statistics	3	4	5	MAT 232	3
	3	4	5	MAT 215 (business majors)	3

Placement Tests

The department of Mathematics and Statistics administers placement examinations for the purpose of appropriate registration in introductory level courses. The Department of Modern Languages and Classics offers the Foreign Language Placement Examination for purposes of both placement and credit. Mathematics Placement tests are mailed to new students prior to summer orientation or can be administered during New Student Orientation or at the beginning of each academic semester.

Advanced Placement (AP)

The University of Maine awards credit for successful completion of AP exams according to the above schedule. Students should request copies of their scores to be sent directly to the Office of Student Records for evaluation and awarding of transfer credit.

Continuing Education Admission

The University of Maine offers a variety of academic programs through the Continuing Education Division. Courses are taught on campus, at selected off-campus sites, and through distance technologies including television and the web. Categories of enrollment in Continuing Education include:

Part-time degree Students:

Students who have met all entrance requirements for either undergraduate or graduate degree enrollment may enroll in courses offered through the CED. Students seeking admission must file applications with the undergraduate Office of Admission or the Graduate School.

College Level Examination Program Table

The following CLEP tests are approved by all colleges as substitutions for University of Maine courses. Other tests may be considered on an individual basis.

Name of Examination	Passing Score	Substitutes for	Credit Hours
American Government	50	POS 100	3
American Literature (w/essay)	50	ENG 241/242	6
Analyzing and Interpreting Literature (w/essay)	50	ENG 129/170	6
Biology, General #	50	BIO 100	4
Calculus w/Elementary Functions*	50	MAT 126	4
Chemistry, General (w/out essay)*#	50	CHY 121, 122	6
College Algebra*	50	MAT 111	3
English Literature (w/essay)	50	ENG 251/252	6
History of the United States I: Early Colonizations to 1877	50	HTY 103	3
History of the United States II: 1865 to Present	50	HTY 104	3
Human Growth & Development	50	CHF 201	3
Psychology, Introductory	50	PSY 100	3
Sociology, Introductory	50	SOC 101	3
Western Civilization I: Ancient Near East to 1648	50	HTY 105	3
Western Civilization II: 1648 to Present	50	HTY 106	3

#Does not satisfy the general education lab/science requirement.
**A scientific, non-programmable Calculator may be used.*

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, Room 122, for class schedules and registration information.

Baccalaureate Students:

The Division of Lifelong Learning offers the Bachelor of University Studies degree. Course offerings are through the CED and Summer Session division. Interested candidates should contact the CED office for more detailed information regarding entrance requirements.

Information and registration materials may be obtained by writing to the Division of Lifelong Learning, 5713 Chadbourne Hall, Room 122, The University of Maine, Orono, ME 04469-5713, by calling (207) 581-3142, by faxing (207) 581-3141, or via the web at www.ume.maine.edu/ced/.

High School Aspirations Incentive Program

This program provides the opportunity for Maine high school students to attend college courses at the University of Maine and is designed to enhance, not replace, the students' high school curriculum.

The High School Aspirations Incentive Program is designed for traditional Maine high school students who have reached at least the junior level (or equivalent), have permission from their high school and their parent or guardian, and have a minimum grade point average of "B" (3.0 on a 4.0 scale). The program is also open to non-traditional Maine high school students who have the approval of an adult education director and/or high school counselor and have a minimum grade point average of "B" (3.0 on a 4.0 scale) on their adult education coursework.

Resident students pay one-half of the in-state tuition cost per credit hour (most courses are three credits). Out-of-state students attending Maine high schools are eligible to participate, but will be charged one-half of the out-of-state tuition cost per credit hour. Courses successfully completed and credits earned may be applied toward a University of Maine undergraduate degree.

Courses may be taken only during the fall and spring semesters. Approved students who wish to enroll in summer session courses will be charged at the full tuition rate. All students must meet the academic course prerequisites, and registration for classes is subject to space availability. Course selection is limited to classes taught by direct, on-site instruction. Traditional high school students may enroll in a maximum of two courses or six credits, whichever is greater, per semester for their junior and senior years. Adult education students may enroll in a maximum of two courses or six credits, whichever is greater, per semester for up to two semesters only. Financial aid is not available to cover the cost of courses.

For more information and application material contact the Office of Admission at (207) 581-1561.

College Level Examination Programs (CLEP)

CLEP is a national program of credit-by-examination that offers the opportunity to obtain recognition for college-level achievement.

Personal reading, on-the-job experience, adult education, correspondence or television courses may have prepared you to earn college credit. The faculties of each of the colleges of the University of Maine have adopted policies on the granting of CLEP examinations.

If you have already taken one of these tests, submit an official score report and as much information as possible about the test to the Office of Student Records.

Enrolled students contemplating taking one of these test must obtain prior approval from their associate deans.

CLEP Information and Policies

1. The CLEP Testing Center is in 127 Alumni Hall. Inquiries on procedure should be directed to (207) 581-1410.
2. Duplicate credit may not be granted.
3. Each department is free to develop or adopt examinations other than CLEP examinations for the purpose of granting credit for specific courses.
4. CLEP exams are given each month. The registration form is due no later than the last day of the month before the month in which you wish to take the test. For example, if you want to take a test in April, your registration form would be due no later than March 31.

5. To register for any CLEP test, complete a registration form and send it to: Institutional Studies, The University of Maine, 5703 Alumni Hall, Room 127, Orono, ME 04469-5703. Payment is due on the day of the test and should not be sent with the registration form; checks or money orders are to be made out to College Level Examination Program.

Scholarships and Financial Aid

The Office of Student Financial Aid administers a variety of Federal, State and University aid programs to help University of Maine students finance their educations. Office staff award, process, and disburse financial aid for University of Maine students, and advise students and their families, the campus community, and the general public on issues related to financial aid. Advisors are available on a walk-in basis between 10:00 a.m. and 3:30 p.m. Monday, Tuesday, Wednesday and Friday, with expanded hours during peak seasons. Office hours are from 8:00 a.m. to 4:30 p.m. throughout the year.

All correspondence concerning financial aid should be addressed to the Office of Student Financial Aid, 5781 Wingate Hall, Orono, ME 04469-5781. For assistance with the application process, status updates, or answers to other questions about financial aid, contact the office at (207) 581-1324, or via e-mail (umfinaid@maine.edu).

Merit Scholarships

Each year, The University of Maine offers a variety of academic scholarships to new, first-time students based on their high school academic achievement and to continuing students based on their academic performance at UMaine. In Fall 2002, the Office of Enrollment Management awarded approximately one quarter of all new, first-time students a total of more than $1 million in merit scholarships. All first-time students who apply and are accepted for admission prior to February 1 are considered for both renewable and one-time only scholarships. Recipients are generally selected based on a combination of class rank and standardized test scores. The higher the rank and the test scores, the more likely a student is to be offered a scholarship.

Renewable Awards:

Top Scholar Awards recognize the highest level of academic performance among Maine high school seniors. Full tuition scholarships are offered to students who rank number one or two in their senior classes at the end of seven semesters. In some instances, this award toward tuition may replace an award of lesser value that was awarded prior to this one.

*Presidential Scholar Awards** recognize nonresidents in the top 10 percent of their high school classes, with minimum SAT scores of 1250. This is a renewable award toward tuition based on maintaining a minimum 3.0 cumulative grade point average (c.g.p.a.) for a maximum of eight semesters and has a total value of more than $20,000 over that period of time.

Presidential Distinguished Scholar Awards recognizes Maine high school students in the top 10 percent of their classes with minimum SAT composite scores of 1250. This renewable award toward tuition is maintained for up to eight semesters by earning at least a 3.0 c.g.p.a. The total value of this award will exceed $10,000 over the life of the award.

*Dean's Scholar Awards** recognize nonresidents in the top 20 percent of their high school classes, with minimum SAT scores of 1150. This is a renewable award toward tuition based on maintaining a minimum 3.0 c.g.p.a., for a maximum of eight semesters and has a total value of more than $8,000 over that period of time.

University Tuition Scholarships recognize students at the very top of their high school classes, based on their academic performance and results of standardized test schools and are awarded regardless of state of residence. These tuition scholarships are also awarded to National Merit Scholarship finalists who indicate The University of Maine as their first choice. A limited number of these awards are made each year.

Distinguished Scholar Awards recognize students who distinguish themselves through class rank and standardized test scores. Awards average $2000 per academic year and are offered to residents and nonresidents. A limited number of these awards are made each year.

Distinguished Student Awards recognize students who exhibit leadership, talent or distinctiveness. Note: an application is required for awards in the visual and performing arts. Awards range from $1000 to full nonresident tuition differential.

Hugh O'Brian Youth Foundation Scholarships are $500 renewable scholarships to matriculating students who have been recognized by the HOBY Foundation for their intellect, initiative and desire to succeed.

* Note: The value of these awards may be different for students who enroll through one of the approved programs offered in connection with the New England Board of Higher Education (NEBHE).

One-time Awards:

Academic Recognition Awards are $1000 to $2000 first-year awards made to students who exhibit high academic standards. These awards are subject to the availability of funds.

Maine Scholar Achievement Awards are designed to recognize scholarship among Maine high school juniors and provide support and encouragement of education and intellectual pursuits. Participating schools have nominated their highest-ranking male and female juniors who have demonstrated a strong desire to learn and high standards of scholarship. A $1000 first-year scholarship will be awarded to each student who matriculates at UMaine.

University of Maine Textbook Scholarships are $500 one-time, first year awards made to students who exhibit commitment to scholarship.

Financial Aid Programs

Some of the financial aid programs available to undergraduates pursuing their first bachelor's degree include:

Federal Pell Grants are awarded based on need to eligible students enrolled in a degree program, and do not have to be repaid.

Federal Supplemental Grants are awarded based on exceptional need to eligible students enrolled in a degree program at least half-time, and do not have to be repaid.

University Grants are awarded based on need to eligible students enrolled in a degree program at least half time, and do not have to be repaid.

Scholarships are awarded to eligible students based on merit and/or need as defined by the eligibility criteria for each scholarship, and do not have to be repaid.

Federal Work-Study is awarded based on need to eligible students enrolled in a degree program at least half-time, which gives students the opportunity to earn spending money and/or living expenses while gaining valuable work experience (job listings are available through the Office of Student Employment and Volunteer Programs).

Federal Perkins Loans are low-interest (5%) loans awarded based on need by the Office of Student Financial Aid to eligible students enrolled in a degree program at least half-time, and repayment is deferred while continuously enrolled at least half-time.

NOTE: No interest is charged until repayment begins; any break in continuous enrollment, such as leave of absence, will result in the student entering into the nine-month grace period, and repayment could begin before the student re-enrolls in a degree program at least half-time.

Federal Stafford Loans (subsidized and unsubsidized) are available through banks, credit unions, and other lending institutions, to eligible students enrolled in a degree program at least half-time who have applied for Federal financial aid, up to the maximum allowable amount of loan based on grade level (see chart in section entitled "Grade Level"). First-time borrowers of a Federal Stafford Loan must complete an Entrance Interview before the loan proceeds will be released. Entrance Interviews can be completed on the web or in person. To complete the requirement on the web, connect through the Office of Student Financial Aid's website, located at www.umaine.edu.

NOTE: Subsidized loans are made to students with need, while unsubsidized loans are made to students with partial/no subsidized loan eligibility; Federal regulations specify annual loan limits based on grade level; actual eligibility may be less than the annual maximum depending upon enrollment level and the amount of all other educationally-related assistance, if any; repayment of principal is deferred for both subsidized and unsubsidized loans while enrolled at least half-time; interest rates are variable but will not exceed 8.25%; interest begins to accrue or to be paid by the student at the time of principal repayment for any subsidized portion of Federal Stafford Loan, and immediately after disbursement on any unsubsidized portion; any break in continuous enrollment, such as a leave of absence, will result in the student entering into the six-month grace period, and repayment could begin before the student re-enrolls in a degree program at least half-time.

Eligibility for Financial Aid

To be eligible for most types of Federal, State and University financial aid, each student must:

- be a U.S. citizen or eligible non-citizen
- have earned a high school diploma or GED
- be offered admission to a University of Maine degree program
- not be in default on a previous Federal educational loan program
- continue to be in good academic standing
- continue to make satisfactory progress toward a degree (see Satisfactory Academic Progress for Financial Aid Recipients)

Most types of financial aid require at least half-time enrollment (6 credits or more) each semester. Financial aid is awarded based upon actual credit load each semester, regardless of official University status. Each student's enrollment level (see chart in section entitled "Enrollment Level") is verified at the end of the Add/Drop period each semester; financial aid eligibility is recalculated and awards are adjusted if necessary. The student is notified any time the financial aid award changes.

Federal, state and university financial aid programs are not available for non-degree enrollment. Some lending institutions offer loan programs to students who are currently taking classes in non-degree programs. Further information is available upon request.

Limits on Financial Aid Eligibility

Most University of Maine students are eligible for enough financial aid eligibility to complete a first bachelor's degree, but limits do exist. To maintain eligibility for financial aid, each student must make progress toward a degree according to the University's Satisfactory Academic Progress for Financial Aid Recipients, measured in terms of both Grade Point Average (GPA) and length of time it takes to reach completion. See the section entitled "Satisfactory Academic Progress for Financial Aid Recipients" for more information on this policy.

Both the Federal Perkins Loan and Federal Stafford Loan programs place limits on the total amount that can be borrowed by any student, called "aggregate" limits. These limits are specified in the U.S. Department of Education's Student Guide, available for free from the Office of Student Financial Aid, or from the Department of Education's financial aid web site (www.ed.gov/prog_info/SFA/StudentGuide/).

Applying for Financial Aid

To enable the Office of Student Financial Aid to determine the amount and types of assistance each student is eligible to receive, students are required to apply for financial aid. The University of Maine requires only one financial aid application: the **Free Application for Federal Student Aid (FAFSA)**. Continuing students who applied for financial aid during the previous academic year should receive either a **Renewal FAFSA** in the mail from the Federal processing center, or a PIN (Personal Identification Number) to access their Renewal FAFSA electronically (see below). Students apply for financial aid each year, using either a FAFSA or a Renewal FAFSA, but not both.

Application data can be submitted over the Web (www.fafsa.ed.gov). **FAFSA on the Web** is available to all applicants, whether they have applied in previous years or not. To access the previous year's financial aid application data using **Renewal FAFSA on the WEB**, a PIN is required. Students are automatically sent a PIN if they previously filed on the Web, made corrections on the Web or are a graduate student. Anyone can request a PIN at: www.pin.ed.gov. Your PIN will be e-mailed to you within 1-5 days or mailed to your permanent address within 7-10 days if no e-mail address is provided. Web applicants must sign their application. Signatures from students and their parents (if the student is dependent) must be provided before the FAFSA can be processed. There are two ways in which the application can be signed: both the student and the parent can use their individual PIN to electronically sign the FAFSA/Renewal FAFSA <u>or</u> a paper signature page can be printed from FAFSA/Renewal FAFSA on the Web, that then needs to be signed and mailed to the address provided. Students should note the confirmation number that is given when the FAFSA/Renewal FAFSA is submitted.

Priority consideration is given to the earliest complete applications for financial aid, especially for any University Grant, Federal Supplemental Educational Opportunity Grant, Federal Work-Study awards, and for Federal Perkins Loans. Applications will be accepted by the Federal-processing center **no earlier than January 1** prior to the Fall Semester for which the student wishes to receive financial assistance. To be considered an "on-time" applicant, the FAFSA (or Renewal FAFSA) must be received at **the Federal processing center by the March 1 deadline** prior to the start of the Fall Semester. We recommend submitting the FAFSA by **February 15**, and use of the Response Postcard is strongly encouraged for those who file a paper application. Financial aid is still available for applicants who apply after the deadline, but may be limited.

After applying, the student will receive a **Student Aid Report (SAR)**, or an e-mail that tells them how to access their SAR on the Internet, from the Federal processing center. The student is expected to review the SAR and make any necessary corrections immediately, or contact The University of Maine Office of Student Financial Aid for assistance. As long as The University of Maine is listed on the SAR in the school section, the Office of Student Financial Aid will receive the application data at approximately the same time. The application will be reviewed and the student will be notified if any additional documentation (such as tax returns, verification forms, or other information) is required.

Once the student's file is considered complete, an Award Letter will be made available to the student. The student accepts (or rejects) each type of aid offered, and

follows all instructions included with the Award Letter to ensure continued processing and disbursement of funds to the student's account at The University of Maine Bursar's Office.

Grade Level

The following definitions are used to determine grade level when awarding financial aid and when certifying student loan eligibility.

Degree Credits Earned So Far	Grade Level	Maximum Stafford Loan Per Year
Less than 24	First-year	$2,625
24 - 53	Sophomore	$3,500
54 - 83	Junior	$5,500
84 or more	Senior	$5,500

NOTE: Federal regulations limit students who have already earned a bachelor's degree to only Federal Work-Study, Federal Perkins Loans, and Federal Stafford Loans.

Enrollment Level

The following definitions are used to describe a student's enrollment level when awarding financial aid and when certifying student loan eligibility.

Credits Per Semester	Enrollment Level
12 or more	Full-time
9-11	Three-quarter-time
6-8	Half-time
1-5	Less than half-time

NOTE: Students participating in cooperative employment programs, internships and field experience may not be eligible for financial aid unless they are enrolled at least half-time. Financial aid eligibility may be reduced for students who audit one or more classes during any semester.

Changes to Financial Aid Awards

Changes to awards can occur even after a financial aid award has been offered, and aid can be retracted even after it has been posted to a student's account with the Bursar's Office. Students are notified whenever their financial aid award is adjusted. Changes to awards may be necessary at any time during the academic year due to any or all of the following circumstances:

- changes in enrollment level each semester
- auditing a course
- withdrawal from all classes
- discontinued attendance in classes
- corrections and updates to original application data
- receipt of additional information affecting continued eligibility
- changes in housing plans
- changes in residency status
- changes in student and/or family circumstances
- receipt of additional assistance and/or scholarships

Students are encouraged to contact the office to discuss the impact on their financial aid eligibility before their status changes, if at all possible.

Financial Aid for Summer Session

Summer Session is considered to be the end of the University's academic year. To be eligible for Summer Session aid, students must have applied for federal financial aid for the previous year. For example, students applying for financial aid for Summer Session 2003 must complete the 2002-2003 FAFSA. Generally, financial aid is limited to any remaining Federal Pell Grant (if eligible) and/or any remaining Federal Stafford Loan eligibility (subsidized and/or unsubsidized). Federal Work-Study may also be available, and requires a separate application that is available early in the spring semester and must be turned in prior to the deadline listed on the application. Students are encouraged to contact the Student Financial Aid Office to request further information. The best time to discuss specific eligibility is midway through the spring semester and after the student is pre-registered.

Withdrawal from All Classes

If a student withdraws from the university after the semester begins, financial aid eligibility must be re-evaluated and pro-rated based on the portion of the semester the student completed. Eligibility for continued deferment of any prior loans is also affected. Any potential refund of tuition and fees from the University may be retained to repay financial aid programs before any reimbursement may be made to the student. In some cases, the student may be required to repay some or all financial aid funds previously disbursed to them by the University's Bursar's Office. Students considering withdrawing from all classes are strongly encouraged to discuss the impact of their decision on their financial aid with the staff of the Student Financial Aid Office before withdrawing. A copy of this policy is available in the Office of Student Financial Aid.

Institutional (Unofficial) Withdrawal

Federal regulations require that the Office of Student Financial Aid determine the last date of attendance for all students who discontinue class attendance. For those students who do not officially withdraw, the mid-point of the semester may be used as the official withdrawal date. Once a withdrawal date has been determined, charges and financial aid will be recalculated based on this date. Please be aware that as a result of this action financial aid funds may be adjusted and money may be owed the University. You will be notified of any change. A copy of this policy is avail-able in the Office of Student Financial Aid.

Special Circumstances and Appeals

Any special circumstances, such as changes in the student's (or other family member's) employment, loss of a benefit or other type of income, changes in marital status or unexpected/unusual costs, should be brought to the attention of the staff of the Office of Student Financial Aid. Students can explain their circumstances in writing, addressed to the attention of the Financial Aid Appeals Committee, Office of Student Financial Aid, 5781 Wingate Hall, Orono, ME, 04469-5781. Appeals are generally considered within two weeks of receipt, and a response is provided in the form of either a specific letter or a revised Award notification.

Satisfactory Academic Progress for Financial Aid Recipients

Federal financial aid regulations limit how long any student can continue to receive financial aid. In order to maintain eligibility for financial aid, each student must be making progress toward a degree. Students can lose eligibility for financial aid if they are not meeting academic standards for continued enrollment, if they are not completing a sufficient number of the credits they have enrolled for, and/or if it is taking too long to earn their degree.

Each student's progress is reviewed once each academic year at the end of the second semester. Students who are not meeting the minimum standards for Satisfactory Academic Progress are notified in writing of the loss of eligibility for further financial aid, effective the following Fall semester. Students who are not making Satisfactory Academic Progress, but who are allowed to continue enrollment, may have to do so without the benefit of financial assistance.

A copy of the Satisfactory Academic Progress Policy is available in the Office of Student Financial Aid.

Estimated Expenses 2003/2004

EXPENSES & FEES FOR MATRICULATING (DEGREE PROGRAM) STUDENTS TAKING 15 CREDITS PER SEMESTER

EXPENSE OR FEE	SEMESTER	ANNUAL	ONE-TIME
TUITION			
MAINE RESIDENT $146.00/CREDIT HOUR	$2,190.00	$4,380.00	
NON RESIDENT $415.00/CREDIT HOUR	$6,225.00	$12,450.00	
NEW ENGLAND EXCHANGE (NEBHE) $219.00/CREDIT HOUR	$3,285.00	$6,570.00	
CANADIAN STUDENTS $219.00/CREDIT HOUR	$3,285.00	$6,570.00	
ROOM AND BOARD			
DOUBLE ROOM HOUSING (Extended)	$1,552.00	$3,104.00	
DOUBLE AS A SINGLE HOUSING	$2,329.00	$4,658.00	
SINGLE ROOM HOUSING	$2,173.00	$4,346.00	
MEAL PLANS AS FOLLOWS			
19+= $50.00 ON MAINECARD DINING FUNDS	$1,526.00	$3,052.00	
14+= $100.00 ON MAINECARD DINING FUNDS	$1,526.00	$3,052.00	
10+= $250.00 ON MAINECARD DINING FUNDS	$1,526.00	$3,052.00	
7+= $500.00 ON MAINECARD DINING FUNDS	$1,526.00	$3,052.00	
Premium Black Bear (unlimited access) + $50.00 Dining Funds	$1,576.00	$3,152.00	
150 Meals + $150.00 Dining Funds	$1,395.00	$2,790.00	
175 Meals + $125.00 Dining Funds	$1,438.00	$2,876.00	
200 Meals + $100.00 Dining Funds	$1,443.00	$2,886.00	
STUDENT FEES			
UNIFIED FEE			
1-5 CREDIT HOURS	$75.00	$150.00	
6-11 CREDIT HOURS	$228.00	$456.00	
12-15 CREDIT HOURS	$557.00	$1,114.00	
16 OR MORE CREDIT HOURS	$572.00	$1,144.00	
COMMUNICATIONS FEE	$10.00	$20.00	
STUDENT ACTIVITY FEE	$35.00	$70.00	
OTHER FEES			
HEALTH INSURANCE (OPTIONAL)		$1100.00	
LATE PAYMENT FEE	$100.00		
LATE REGISTRATION FEE	$100.00		
RE-INSTATEMENT FEE	$100.00		
NON-REFUNDABLE CHARGES/CREDITS			
APPLICATION FEE			$40.00
ADVANCE DEPOSIT (CREDIT)			$150.00

BOOKS AND SUPPLIES APPROXIMATELY $700.00 PER YEAR

TUITION AND FEES ARE ESTIMATED. TUITION RATES FOR 2003/04 WERE NOT ESTABLISHED AT TIME OF PUBLICATION AND ARE SUBJECT TO CHANGE BY BOARD OF TRUSTEES ACTION

Semester/Session 11 Weeks or Longer		
	Tuition and Fees	
Action and Date	Refund	Room Refund
Cancellation prior to the first day of semester/session	100%	100%
Withdrawal/drop prior to the end of the first week	100%	100%
Withdrawal/drop prior to the end of the second week	100%	75%
Withdrawal prior to the end of the third week	50%	50%
Withdrawal prior to the end of the fourth week	50%	25%
Withdrawal prior to the end of the fifth week	50%	0%
Withdrawal prior to the end of the eighth week	25%	0%
Withdrawal after the eighth week	0%	0%

Sessions less than 11 weeks	
Action and Date	Tuition and Fees Refund
Cancellation through the first day of classes	100%
Withdrawal after the first day until 30% of the term has expired	50%
Withdrawal after 30% of the term has expired and until 60% of has expired	25%
Withdrawal after 60% of the term has expired	0%

Satisfactory Academic Progress Appeal Procedure

Every student has the right to appeal upon notification of loss of financial aid eligibility due to lack of academic progress. Appeals are considered by a committee. Appeals can only be made in writing and should be sent, along with appropriate supporting documentation, to the attention of the Chair of the Satisfactory Progress Appeal Committee, Office of Student Financial Aid, 5781 Wingate Hall, Orono, ME 04469-5781. Students are notified of the result of the appeal by letter.

Questions about the policy or the appeal procedure can be referred to the Office of Student Financial Aid (207-581-1324).

Expenses and Fees

Expenses of attending include tuition, room and board, fees, etc. An estimated table of expenses is on page 10.

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.

Refunds

Add-Drop Refunds

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.

Tuition, Room and Board, and Fee Refunds

Student charges will be refunded to students who are voluntarily withdrawing or dropping courses from the University of Maine System institutions in accordance with the schedule and provisions set forth below. For purposes of these procedures, withdrawal is defined as students who give official notification of their withdrawal to the university after a semester/session begins. Dropping courses is defined as a reduction in course load while remaining enrolled in the university. Refunds for drops are issued during the first two weeks only. Some fees are not refundable and they include application, matriculation and new student program fees. If a student leaves the university without official notification (dropout), these procedures do not apply and thus dropouts are not entitled to refunds.

Determination of Attendance

For purposes of calculating refunds, the attendance period begins on the opening day of scheduled university classes, included weekends and holidays, and ends on the date the student notifies the registrar/records office (or other designated office), in writing, that (s)he is withdrawing.

Board Refunds

Students who withdraw from the university will be charged for board funds expended and/or for meals at the daily established rate through the date of clearance. Any remaining balance will be refunded. Any part of a board plan, not charged on a daily rate, will be refunded in accordance with the residence hall contract.

Room Refunds for Sessions Less Than 11 Weeks, and Other Situations

All room refunds will be governed by the terms and conditions of the residence hall contract.

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 Student Auxiliary Services according to the circumstances of each case.

Students applying for an exception to the above must complete an exception request form available at the Office of Housing Services. 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 for Residents' Retention 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 Executive Director of Student Auxiliary Services. 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.

Advance Deposits

No part of an advance deposit is refundable after May 1 (January 1 for Spring) for tuition and fees and after June 1 (January 1 for Spring) for room charges for students withdrawing from a University of Maine System institution. Although such deposits are applicable to tuition and room charges for students who remain enrolled, students who withdraw forfeit them.

Involuntary Withdrawals

Consideration for retroactive refunds of tuition and fees for involuntary withdrawals, e.g., extended illness or military service, will be considered by the university on a case-by-case basis. Administrative dismissals are not covered by these procedures and thus are not entitled to refunds of institutional charges.

Statute of Limitations

Appeals for the exception to the established refund practice may be made to the designated university official. Normally, appeals will be considered up to 90 days after the close of the semester/session for which the student is claiming a refund. For a typical semester/session the dates are no later than March 31 (Fall), August 31 (Spring) and November 30 (Summer). University academic appeals committees hear appeals on academic matters and have no authority to authorize refunds.

Definitions and Guidelines for Involuntary and Voluntary Withdrawals

1. Involuntary withdrawal - In order to be eligible for a refund under the conditions below, the student must submit the required notification of withdrawal and the appropriate substantiating data that supports the withdrawal to the appropriate university office. The university official makes a decision based on the documentation and/or conditions presented. Involuntary withdrawals may include but are not limited to the following:
    1. Involuntary active duty in the armed forces - The request for withdrawal must be substantiated with copies of military orders that show proof of date of entry. The individual's commanding officer or another appropriate official must sign the orders.
    2. Illness of the student or an immediate family member - A physician's certification must be provided stating the student's or family member's illness that required the student's withdrawal.
    3. Death of the student or an immediate member of the family - Appropriate documentation must accompany the request for withdrawal.
    4. Involuntary transfer by the student's employer that precluded continued enrollment (armed services are considered employers under this section) - The request for withdrawal must be substantiated by appropriate documentation from the employer.
2. Voluntary withdrawal - Voluntary withdrawal results from students who give official notification of their withdrawal to the university after a semester/session begins.

General Information

All accounts are carried in the name of the student, regardless of the source of payment. The University expects the student to be financially responsible. 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 $100.00 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 reviewed for cancellation. Financially delinquent students will be subject to the following administrative sanctions:

1. They are prevented from receiving an official certified copy of their transcript and diploma.
2. They are prevented from registration or pre-registration at any university in the University of Maine System.
3. The University of Maine System or its universities may disclose (directly or through its collection agencies) to a credit bureau organization that the student has failed to pay an assessed charge.
4. The University of Maine System or its universities may use in-house collection efforts, commercial firms, legal services, and the State of Maine Bureau of Taxation for collection on the accounts.

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.

Third Party Sponsor (Employer) Billing Process

1. The student receives a billing statement and account information card from the University. With the first bill for the fall, spring and summer sessions, the student receives an account information card, which is used to notify the University of any third party sponsorship.
2. It is the student's responsibility to obtain authorization from the third party sponsor (purchase order/authorization form) which indicates how much the third party sponsor will be paying on the bill.
3. The student completes the account information card by noting on the bottom 1) amount due from the bill (current balance due); 2) amount of sources (i.e. how much will be paid by the third party); 3) payment enclosed (for any balance not covered by the third party).
4. The student mails the account information card, authorization form, copy of the statement and payment (if any due) to the University by the payment due date. If these items are received by the payment due date shown on the statement, no late fee will be assessed.

Please direct questions on the third party sponsor billing process to the Bursar's Office at (207) 581-1530.

Installment Plan

For students and parents who find it more convenient to make monthly payments, the University is offering an interest free installment plan which enables you to pay all or part of the annual charges in ten equal installments beginning in June. There is a fee for the service.

Student opting to use the installment plan must complete the specific application available in the Bursar's Office and return it directly to the address shown on the application. Please direct questions on the Installment Plan to the Bursar's Office at (207) 581-1521.

Student Financial Appeal

The following is an appeal process for students who dispute financial claims by the University of Maine; i.e., tuition, fees, room and board, and amounts due on outstanding student loans.

1. Students should submit a written statement to the University Business Officer or other designated university official stating the amount and nature of the disagreement and why he or she feels the charge is incorrect.
2. Students should submit their written appeal within thirty (30) days of the initial billing of a disputed charge. The Business Officer should respond in writing to the student's complaint within 30 days of the receipt of the appeal.
3. If the Business Officer's decision is considered incorrect by the student, the student may appeal that decision (within 30 days) in the following order:
    1. To the Chief Financial Officer or equivalent official as designated by the university.

2. To the President of the university.
3. To the Treasurer of the University System, whose decision shall be final.

Residency Guidelines

Residency Classification

Many factors are considered in determining residency for in-state tuition purposes. No one factor can be used to establish domicile, rather all factors and circumstances must be considered on a case-by-case basis. A domicile or residency classification assigned by a public or private authority neither qualifies nor disqualifies a student for University of Maine System (UMS) in-state status.

A student's eligibility for in-state tuition is determined at the time of acceptance to the University. This determination is made for a non-matriculated (non-degree) student at the time of registration. The decision, made by the Office of Admission shall be based on information and documentation furnished by the student and other information available to the University. No student is eligible for in-state tuition classification until he or she has become domiciled in Maine, in accordance with University guidelines, before such registration. If the student is enrolled full-time in an academic program, as defined by the University, it will be presumed that the student is in Maine for educational purposes, and that the student is not in Maine to establish a domicile. A residence established for the purpose of attending a UMS institution would not by itself constitute domicile. The burden will be on the student to prove that he or she has established a Maine domicile for other than educational purposes. An individual who has lived in the State of Maine, for other than educational purposes, one year prior to registration or application to a campus is considered an in-state student.

In general, members of the Armed Forces and their dependents will be granted in-state tuition while they are on active duty within the State of Maine or if their Military State of residency is Maine as evidenced by appropriate official documentation. A Maine resident who is absent from the State for military or full-time educational purposes will normally remain eligible for in-state tuition.

A student, spouse or domestic partner of a student, who currently has continuous, permanent full-time employment in Maine before the student decides to apply for degree status at the University will be considered in-state for tuition purposes.

A student who is dependent on his/her parent(s) and/or legally appointed guardian (or to whom custody has been granted by court order) is considered to have a domicile with the parent(s) for tuition purposes.

In-state tuition is not available to anyone who holds a non-immigrant U.S. visa. If an individual is not a domiciliary of the United States, they cannot be a domiciliary of the State of Maine.

A student who attended an out-of-state educational institution at in-state tuition rates in the immediately preceding semester shall be presumed to be in Maine for educational purposes and not to establish a domicile. Again, the burden will be on the individual to prove that he or she has established a Maine domicile for other than educational purposes.

Change of Residency Classification

To change residency classification and tuition status, students must:

1. File a "Request for Change in Tuition Status" cover sheet and application with the Associate Bursar at the University of Maine, Bursar's Office, 5703 Alumni Hall, Orono, Maine 04469-5703 <u>before</u> the first day of classes for the summer session, fall or spring semester for which residency is requested. All applications are prospective.
2. If the Associate Bursar's written decision, to be issued within 30 days of the first day of classes, is considered incorrect by the student, the student may appeal that decision in writing, within 30 days, in the following order:
   1. The Bursar. After receiving a written decision from this level within 30 days, the student has 30 days to submit a written appeal to:
   2. The Chief Financial Officer. After receiving a written decision from this level within 30 days, the student has 30 days to submit a written appeal to:
   3. The President (or designee). After receiving a written decision from this level within 30 days, the student has 30 days to submit a written appeal to:
   4. The Treasurer of the University System, whose decision is final.

In the event that the Associate Bursar, or other designated official, possesses facts or information indicating a student's change of status from in-state to out-of-state, 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 of the Associate Bursar as set forth above.

Special Student Services and Facilities

The University of Maine provides a wide range of specialized services for its students. Some of the most widely used are listed below.

Campus Recreation

Campus Recreation offers a great variety of recreational programming to students and the university community. Approximately 65 intramural sports are offered annually for men, women and coed competition. There are an increasing number of sport clubs as well, including: Blade Society, Men's and Women's Lacrosse, Men's and Women's Rugby, Men's and Women's Volleyball, Mountain Bike, Hackey Sack, Tennis, Baseball, Shotokan, and Ultimate Frisbee. Fitness classes are offered each semester in aquacize, kick boxing, step aerobics, hip hop, yoga and pilates for a small fee. Facilities in Lengyel and Memorial Gyms are open for free play and equipment is available for free checkout at these locations. Maine Bound offers a full range of outdoor adventure courses (academic credit and non-credit) and activities. Maine Bound also rents outdoor gear like tents, sleeping bags, skis, stoves, backpacks and more. Campus Recreation employs a good number of students. Students interested in on campus employment should contact us in 140 Memorial Gym or in the new Maine Bound Adventure Center (located southwest of the Maine Center for the Arts, on the hill). The Center houses the Maine Bound staff and equipment rental operation, and offers students the best indoor climbing in the area. For more about Campus Recreation, visit the web site at www.ume.maine.edu/~recinfo or call (207) 581-1082 or (207) 581-1794.

Career Center

The Career Center helps students to formulate career goals, select an academic major, and conduct job searches. For additional information call (207) 581-1359 or go to www.ume.maine.edu/~career.

Commuter Services/Non-Traditional Student Programs Office

The Commuter Services/Non-Traditional Student Programs Office provides a variety of personal advising, support and referral services. For additional information call (207) 581-1420 or visit our web site at www.umaine.edu/cscl/commuter.htm.

The Albert D. Conley Speech and Hearing Center

The Albert D. Conley Speech and Hearing Center, located in Dunn Hall on the University of Maine campus, serves as the primary clinical demonstration and teaching site for undergraduate and graduate students in the Department of Communication Sciences and Disorders. Susan K. Riley, M.S.,CCC-SLP is the Clinical Director for the Conley Center. At the Center, faculty and graduate students provide speech, language, and audiological services to the University community and residents in the surrounding communities. The newly renovated Center was designed as an accessible welcoming environment for clients and families. UM students and their immediate family members are eligible for services at no cost during the academic year.

The Conley Center serves approximately 125 clients a year for speech/language therapy and 200+ clients per year in the audiology clinic. Clients are all ages and have varied needs, from preschoolers with speech/language delays to adults with mental retardation and limited communication skills to international students seeking assistance with acquiring English language skills. The faculty supervisors and student clinicians maintain a client and family-centered approach, working closely with family members, caregivers and other service providers in the client's life to provide comprehensive, individualized and functional services.

Evaluation and remedial services are offered on the semester (Fall, Spring) and summer calendar of the University. A Diagnostic Clinic is conducted on Friday mornings during the Fall and Spring semesters. Comprehensive audiological services are provided on a twelve month basis. Graduate students are supervised by clinical and academic faculty who hold the Certificate of Clinical Competence (CCC) in Speech-Language Pathology (CCC-SLP) through the American Speech-Language-Hearing Association. Our full-time Clinical Audiologist, Amy Engler Booth, who holds the ASHA CCC in audiology, supervises graduate students in audiology practicum.

Recently, the service options available to clients and families at the Conley Speech and Hearing Center have expanded with the development of two Specialty Clinics: The Stuttering Clinic and The Family-Based Treatment Clinic. The Clinics are coordinated and supervised by clinical and academic faculty with special clinical expertise and research interests in these areas.

For further information on services please call (207) 581-2006.

Counseling Center

The Counseling Center serves as the full-range mental health service on campus providing group, individual and couples psychotherapy. Other services include prevention and educational programming, consultation and training to students and staff, testing and assessment, career and academic counseling, crisis response, and psychiatric services. For additional information call (207) 581-1392 or visit our web page at www.umaine.edu/counseling.

Dean of Students and Community Life

The Dean of Students and Community Life advocates for students, offers them counsel and advice, and helps them cut through red tape. For additional information call (207) 581-1406 or visit our web site at www.umaine.edu/cscl.

Desktop/Laptop Computing Services

The Department of Information Technologies has facilities in several locations on campus to provide computing services. More information is available at: www.umaine.edu/it/.

Help Center, Room 17 Shibles Hall: Help center consultants provide walk-in and telephone assistance for Macintosh and Windows/Intel software support, First Class Conferencing and Internet support, disk recovery, virus utilities, and file conversion. Call (207) 581-2506, or e-mail: ITHELP@umit.maine.edu.

Public clusters of Windows/Intel and Mac personal computer are available at the Memorial Union and Fogler Library. Additional computers are available in the classroom clusters in Barrows and Lengyel Halls (Macintosh computers), and Donald P. Corbett Business Building, Little Hall and Boardman Hall (Windows/Intel computers). The Bumps Room, in the Memorial Union, provides students access to computers for e-mail and web access only. All clusters provide a wide variety of software and Internet applications, including Microsoft Office, FirstClass, Netscape, CAPS, and URSUS (the Library system).

Computer Connection, Room 28 Shibles Hall, is a store for the University of Maine community offering personal computers, printers, computer peripherals, memory, supplies and software at discounted educational prices. Phone (207) 581-2580 for a general catalog or for information about financing and renting computers. View our Web Page at ccweb.umecit.maine.edu/ or visit our showroom at 28 Shibles Hall (in the basement).

Computer Repair, Room 107 Lord Hall, services all university-owned computer equipment, as well as computer equipment owned by staff members and students affiliated with the University of Maine. It provides warranty service for Apple, Dell and Toshiba computers, and most Hewlett-Packard laserjet-series printers purchased at the Computer Connection. Extended warranty AppleCare contracts are also available. For more information call (207) 581-2512.

UMaineNet provides students living in all UMaine residence facilities (with the exception of University Park) internet access, telnet capabilities, a FirstClass account (the University's computer conference system), as well as access to various software packages for both Mac and Windows/Intel. For more information call (207) 581-2506, or e-mail: ITHELP@umit.maine.edu.

FirstClass offers personal e-mail (including Internet mail services); public and private electronic conferencing and discussion groups; online chatting with other users; as well as Netnews and ListServe subscription services. Using your free account, you can participate in discussions on topics ranging from multiculturalism to favorite movies, keep informed about campus events, as well as obtain course information, syllabi, and assignments. For more information call (207) 581-2506 or visit: ww.ume.maine.edu/~it/fc/.

Instructional Workshops: are offered in a hands-on computer classroom for introduction to operating systems and a variety of software applications for Macintosh and Windows. Schedules, fees, and registration information are posted in the Public Clusters, at our website www.ume.maine.edu/~it/iw/, and in the Maine Perspective. Phone (207) 581-1638 for more information.

Services for Students with Disabilities

The Office of Services for Students with Disabilities facilitates the education of students with physical, learning, and emotional disabilities by providing a point of coordination for accommodations and special services they may need while attending the University of Maine. No qualified individual with a disability will be denied access to or participation in services or programs at UMaine. For further information please contact the Coordinator of Services for Students with Disabilities at telephone (207) 581-2319, TDD (207) 581-2311or see the section on Division of Lifelong Learning-Onward Program.

Intercollegiate Athletics

The University of Maine is an NCAA Division I institution (football is Division I-AA), offering 19 varsity sports. Conference memberships include America East, the

Atlantic 10, Hockey East and the Eastern College Athletic Conference. For information call (207) 581-1052.

Multicultural Student Affairs

The Office of Multicultural Programs provides programming, resources and support that empowers students, staff and faculty in the area of multiculturalism. The office promotes inclusiveness and diversity by creating programs which facilitate race relations and celebrate culture. For more information call (207) 581-1405 or visit our web site at www.umaine.edu/cscl/msa.htm.

National Student Exchange (NSE)

The National Student Exchange (NSE) program offers University of Maine students a unique opportunity to enhance their academic program through study at one of over 170 North American universities within the NSE consortium. Through NSE, students may study away for a semester or academic year and earn academic credit. Program costs are comparable to UMaine tuition, fees, room and board. Financial aid recipients may apply their aid toward most NSE sites. Applicants for NSE must have a 2.5 grade point average or higher. For further information contact the National Student Exchange Coordinator in the Office of International Programs in Winslow Hall at (207) 581-1509.

Off-campus Housing

Off-campus Housing assistance is available to all students and staff at the University through the Memorial Union Information Center on the main floor of the Memorial Union. This office maintains a listing of available living quarters in the Orono, Old Town, Bangor and Veazie areas. For more information call (207) 581-1405 or visit our off-campus web site at inferno.asap.um.maine.edu/offcampus.

Religious Services

Religious programming, worship, study, conversation, and witness are provided by fifteen active student organizations. Chaplains and other religious representatives are available for counseling and/or instruction. For more information call (207) 581-1405 or visit our web site at www.umaine.edu/cscl/religiousaffairs.htm.

Student Employment and Volunteer Programs

Student Employment helps students find jobs both on and off-campus during the academic year and summer. Volunteer Programs seeks out and promotes "hands on" service where participants engage in projects with the community. For more information call (207) 581-1349.

Student Government

The University of Maine sustains a long tradition of active, independent student government. The University is committed to active student involvement in the operation of the University, not only for the valuable perspective student government brings to the planning and decision processes, but for the unique educational opportunities it gives to participating students. University of Maine Student Government, Inc. is funded and controlled by undergraduate students with the sole purpose of benefiting students through educational, cultural and social programming. Its officers include an elected president and vice-president who appoint and coordinate a diverse administrative staff representing student needs and promoting student rights. Visit us on our web site at www.ime.maine.edu/~sgov.

The General Student Senate (GSS) is the legislative unit of Student Government, Inc. under the leadership of the vice-president and has final approval over all Student Government matters. The Student Handbook provides complete details on student government structure. The Student Handbook is available on the web at www.umaine.edu/handbook.

Student Health Services

Student Health Services offers walk-in and by-appointment medical services for urgent medical problems, rehabilitation of injuries, routine health check-ups, women's health exams, and the treatment of chronic illness. Consultations from a variety of medical specialists including eye care, orthopedics, podiatry, sports medicine, and massage therapy are available at the facility. More information about our programs can be found on our web site at www.cutlerhealth.umaine.edu or call (207) 581-4179.

Student Judicial Affairs Office

The Student Judicial Affairs Office administers and enforces the student conduct code. The University of Maine System Student Conduct Code seeks to promote the pursuit of activities that contribute to the intellectual, ethical, and physical development of the individual under the auspices of the University of Maine System and the individual campuses and to ensure the safety of persons engaging in those pursuits. It further seeks to protect the free and peaceful expression of ideas and to assure the integrity of various academic processes. For additional information call (207) 581-1409 or visit our web site at www.umaine.edu/cscl/judicialaffairs.htm.

Student Organizations and Leadership Office

The Office for Student Organizations and Leader Development is dedicated to assisting student organizations, student leaders and organization advisors to optimize their full potential by providing resources, education and consulting assistance. Our goal is to help the 100+ student organizations, their members and advisors carry out their purpose in adding exciting, fulfilling and enriching opportunities and experiences for our students and the campus community. If you would like more information about this office or student organizations, please call (207) 581-4183 or visit our web site at www.umaine.edu/cscl.

Student Publications

The award-winning student newspaper since 1875, *The Maine Campus*, is published Mondays and Thursdays throughout the academic school year. It is written, edited and produced entirely by University of Maine students. Its offices are located in Memorial Union. For information call (207) 581-1273 or visit the paper online at www.mainecampus.com.

The Maine Review is the University of Maine's annual literary magazine. It publishes fiction, non-fiction, poetry, and artwork by University students. For further information contact the English Department at (207) 581-3822.

Study Abroad

The University of Maine encourages its students to study abroad for academic credit. Study abroad leads to the development of cultural understanding and, in some cases, foreign language skills. Study abroad adds depth to a résumé and can give students a competitive edge in the job market. UMaine offers a number of exchange programs through consortial agreements with universities in Argentina, Australia, Austria, Bulgaria, Canada, Chile, China, Costa Rica, Czech Republic, Denmark, France, Germany, Ireland, Italy, Japan, New Zealand, Northern Ireland, Spain, Turkey, and United Kingdom. Many of these program's costs are comparable to tuition, fees, room, and board at UMaine. In addition to UMaine's programs, there are numerous other study abroad programs in Africa, Asia, Europe, and Latin America that UMaine students may attend; and many of these programs are taught in English. Financial aid recipients may use their aid for a semester or year abroad, and some independent study abroad organizations offer their own scholarships. Applicants for study

abroad should have at least a 2.75 grade point average. For further information about study abroad or for individual advising, contact the Office of International Programs in Winslow Hall at (207) 581-2905.

Tutoring Services

The Tutor Program provides free tutorial services in 100 and 200 level courses for students who need academic assistance related to their course work. Tutorial assignments are made in small groups of four students, all of whom have the same course and professor. By working together, students learn how to process course material as well as sharpen their reasoning and questioning skills. Sessions are process-oriented, learner-centered and require the active participation of each group member. Requests for peer tutors are accepted during the first eight- (8) weeks of the semester. Assignments are made based upon the availability of qualified peer tutors, funding and course demand. For further information, contact the Tutor Program, 104 Dunn Hall, (207) 581-2351 or see the section on Division of Lifelong Learning-Onward Program.

University Bookstore

The University Bookstore serves the academic community by selling the books and supplies required for course work and by offering a wide selection of general books, supplies and other merchandise and services. For more information call (207) 581-1700 or e-mail us at UMBook@maine.edu or check our website at www.umbook.umeadm.maine.edu/.

Women's Resource Center

The Women's Resource Center promotes and maintains an inclusive, positive and supportive climate conducive to women's personal and professional development at the University of Maine. It provides linkage with women and women's organizations throughout the state. The Center 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 promotes a closer relationship between the women on the University of Maine campus and women in the larger Maine community, reaching out to women's programs and initiatives and providing support and guidance, including mentoring opportunities with women activists and gender equity programs for girls in area high schools. In addition to an extensive collection of books, periodicals, and videos of interest to women, the Center offers programs, provides meeting space, produces and distributes a calendar of events by and about women and promotes within the university community a broader understanding of the diverse experiences of all women. For additional information call (207) 581-1508 or visit our website: www.wrc.umaine.edu/.

Facilities and Centers

The University of Maine maintains a wide variety of special educational and research facilities and supports many special educational, research, and public service programs. A few of these that are of most direct interest to undergraduate students are described below.

The Raymond H. Fogler Library

The Raymond H. Fogler Library is the largest library in the state of Maine. It contains an excellent collection of general materials to support undergraduate studies, as well as rich and varied research collections. Fogler Library houses over 900,000 volumes, 1.4 million microforms, over 2 million government documents, and maintains about 6,700 periodical subscriptions and standing orders. Mariner is an information gateway to electronic resources which provides access to the holdings of all libraries in the University of Maine System, as well as to a collection of local and remote electronic indexes, abstracts and databases. The Fogler Library is a U.S. Patent and Trademarks Depository Library and the archive for the William S. Cohen papers. Other specialized collections include Canadiana, Maine-related materials, sound recordings and music scores, and historical manuscripts and maps.

University of Maine Museum of Art

The University of Maine Museum of Art, located in Bangor, ME, houses a permanent collection exceeding 5700 works of art, 20% of which are accessible in public spaces throughout campus. Highlights of the early collection included works, primarily on paper, by John James Audubon, Marc Chagall, Francisco Goya, Childe Hassam, Edward Hopper, Kathe Kollwitz, Giovanni Domenico Tiepolo, and James M. Whistler. More recent acquisitions include works by artists such as Ralph Blakelock, Georges Braque, Mary Cassatt, Honore Daumier, George Inness, Diego Rivera, Pablo Picasso, and Giovanni Battista Piranesi. The Robert Venn Carr '38 Collection is comprised of 285 pieces, and includes works on paper by many contemporary masters including Max Beckmann, Jim Dine, Roy Lichtenstein, and Robert Rauschenberg.

The Museum's permanent collection also celebrates the long heritage of Maine art and artists. Included in the collection are examples by Maine artists such as Berenice Abbott, Marsden Hartley, Winslow Homer, John Marin, Carl Sprinchorn, and Andrew Wyeth.

The Hudson Museum

The Hudson Museum is located in the Maine Center for the Arts on the UMaine campus. Hudson Museum exhibits and programs explore anthropology as the study of humans and their reliance on culture. The museum's collections and exhibits function as educational and research aids for University faculty, students and the general public. The 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. The Hudson Museum offers permanent, temporary and outreach exhibits, teacher workshops, lectures and children's programs. For more information call (207) 581-1901.

Page Farm and Home Museum

The Page Farm and Home Museum documents the history of Maine from 1865 to 1940 through a collection of farm machinery and household items from that period. The museum building itself is a part of Maine agricultural history. The large, post and beam barn is the last of the original agricultural buildings dating from the founding of the University of Maine in 1865. Careful renovations display the collection over its three floors while preserving much of the building's original character. For further information call (207) 581-4100.

The Hutchins Concert Hall

The Hutchins Concert Hall in the Maine Center for the Arts 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, country to rock and much more. Isaac Stern and Yo-Yo Ma, The 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, Bob Dylan, and Dave Matthews are some of the artists who have appeared there.

The Leonard and Renee Minsky Music Recital Hall

This 280-seat facility is primarily the site for faculty and student recitals, vocal and instrumental ensembles, concerts, and a few Maine Center for the Arts performances. Various dance and theatre productions are also presented. Overlooking the Hall and wired to it with the latest technology is a state-of-the-art recording studio that supports a course in recording arts.

Darling Marine Center

The Darling Marine Center is the marine laboratory of the University of Maine. Located on the Maine coast just 100 miles south of Orono, the 170 acre campus is situated near a wide variety of marine habitats including rocky coast, sandy beaches, marshland, and mudflats. The campus is composed of 23 buildings totaling nearly 100,000 sq. ft. including research laboratories, faculty and graduate student offices, a marine library, classrooms, dining hall, a SCUBA diving support facility, and a Flowing Seawater Laboratory designed for culturing live marine organisms. The Center offers housing for students, a wide variety of modern research instrumentation, and it has a modern fleet of research vessels for educational and research purposes. Research internships are available for undergraduates enabling them to conduct research at the Center during the summer months. The School of Marine Sciences offers a unique Semester-by-the-Sea program for undergraduate marine majors in which students live and study at the Center during a fall semester.

Maynard F. Jordan Planetarium and Observatory

The Maynard F. Jordan Planetarium is a resource for students and the public. It conducts labs for courses in astronomy, and presents public programs. The Planetarium, a domed theater where visitors can look up to see an exact simulation of the night sky produced by a Spitz Systems Nova planetarium projector, offers sky programs for visitors of all ages throughout the school year. It offers a series of general admission showings on weekends (free to UMaine students) and special, private group events.

For more information please contact the planetarium office at (207) 581-1341.

The Jordan Observatory, a small, domed building next to the Memorial Union, houses an eight-inch Alvan Clark refractor telescope and several smaller instruments that can be used to view many of the wonders in the Maine sky. Astronomy students use the facility for studies on weeknights, and student volunteers operate it on weekends for the general public. For observing hours and conditions please call (207) 581-1348.

Canadian-American Center

The Canadian-American Center is one of the leading institutes for the study of Canada in the United States. The United States Department of Education has designated it a National Resource Center on Canada. The Center coordinates an extensive program of undergraduate and graduate education, contributes to the continued development of Fogler Library as a major research library on Canada, promotes cross-border faculty and student exchanges, and encourages cross-border research projects in the humanities, social sciences, natural sciences, and professions. The Center also directs outreach programs to state, regional, and national audiences. These include Canada Week, the Atlantic Provinces Teachers Institute, and the Atlantic Canada Faculty Institute.

The Wabanaki Center

The Wabanaki Center serves as a resource to the University community, with special efforts directed to the personal, professional and academic achievements of the Native American student population. The Center offers academic and career counseling for students, and works closely with Native American students and alumni organizations. Through advocacy, mentoring and internships, the Wabanaki Center supports students in preparing for positions of leadership and service. For more information, please contact: Native American Programs, University of Maine, 5724 Dunn Hall, Room 308, Orono, Maine 04469-5724. Call (207) 581-1417 or e-mail: http://www.ume.maine.edu/ ~NAP.

Franco-American Centre

The Franco-American Centre stimulates the development of academic and program offerings relevant to the history and life experience of this ethnic group in Maine and New England. It promotes bilingual, bicultural and multicultural models of delivery of services; provides work experiences for university students; and maintains 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 Maine cultural communities. The Centre also publishes a quarterly, bilingual, socio-cultural journal, Le Forum, publishing articles, essays, poems, and short stories of a diverse ethnic and cultural nature. For further information please contact the Franco-American Centre, University of Maine, Crossland Hall, Orono, Maine 04473. Telephone: (207) 581-3764.

Maine Folklife Center (MFC)

The Maine Folklife Center (MFC) houses the nationally distinguished Northeast Archives of Folklore and Oral History. This collection of several thousand tape recordings of oral histories and musical performances, plus thousands of photographs, documents such subjects as the traditions of the Maine lumberwoods and river drives, women's folklife, coastal and maritime occupations, and textile folk arts and artists. MFC publishes the scholarly monograph series Northeast Folklore and the semi annual newsletter, Maine Folklife. For more information telephone: (207) 581-1891.

Center for Community Inclusion, Maine's University Center for Excellence in Developmental Disabilities Education, Research and Service

The Center for Community Inclusion coordinates the undergraduate and graduate Interdisciplinary curricula in Disability Studies. The Center administers several education, research and public service projects focusing on improving the quality of life for persons with disabilities and their families. Students who elect the interdisciplinary curriculum in Disability Studies may become involved in these projects through practica and internships.

The Albert D. Conley Speech and Hearing Center

The Albert D. Conley Speech and Hearing Center, located in Dunn Hall on the University of Maine campus, serves as the primary clinical demonstration and teaching site for undergraduate and graduate students in the Department of Communication Sciences and Disorders. Susan K. Riley, M.S.,CCC-SLP is the Clinical Director for the Conley Center. At the Center, faculty and graduate students provide speech, language, and audiological services to the University community and residents in the surrounding communities. The newly renovated Center was designed as an accessible welcoming environment for clients and families. UM students and their immediate family members are eligible for services at no cost during the academic year.

The Conley Center serves approximately 125 clients a year for speech/language therapy and 200+ clients per year in the audiology clinic. Clients are all ages and have varied needs, from preschoolers with speech/language delays to adults with mental retardation and limited communication skills to international students seeking assistance with acquiring English language skills. The faculty supervisors and student clinicians maintain a client and family-centered approach, working closely with family members, caregivers and other service providers in the client's life to provide comprehensive, individualized and functional services.

Evaluation and remedial services are offered on the semester (Fall, Spring) and summer calendar of the University. A Diagnostic Clinic is conducted on Friday mornings during the Fall and Spring semesters. Comprehensive audiological services are provided on a twelve month basis. Graduate students are supervised by clinical and academic faculty who hold the Certificate of Clinical Competence (CCC) in Speech-Language Pathology (CCC-SLP) through the American Speech-Language-Hearing Association. Our full-time Clinical Audiologist, Amy Engler Booth, who holds the ASHA CCC in audiology, supervises graduate students in audiology practicum. Recently, the service options available to clients and families at the Conley Speech and Hearing Center have expanded with the development of two Specialty Clinics: The Stuttering Clinic and The Family-Based Treatment Clinic. The Clinics are coordinated and supervised by clinical and academic faculty with special clinical expertise and research interests in these areas.
For further information on services please call (207) 581-2006.

Academic Majors & Minors

THE UNIVERSITY OF MAINE ACADEMIC MAJORS

Animal and Veterinary Sciences 95
Anthropology 60
Aquaculture 97
Art Education 61
Art History 62
Biochemistry 98
Biology 100
Biological Engineering 37
Botany 100
Business Administration 22
Chemical Engineering 39
Chemistry 62
Child Development and Family Relations 29
Civil Engineering 40
Clinical Laboratory Sciences 103
Communication 64
Communication Sciences and Disorders 65
Computer Engineering 41
Computer Science 65
Construction Management Technology 42
Ecology and Environmental Sciences 104
Economics 67
Electrical Engineering 43
Electrical Engineering Technology 45
Elementary Education 30
Engineering Physics 47
English 68
Environmental Management and Policy 107
Financial Economics 69
Food Science and Human Nutrition 109
Forest Ecosystem Science 111
Forest Operations Science 112
Forestry 113
French 70
Geological Sciences 114
German 70
History 70
Information Systems Engineering 49
Interdisciplinary Studies 71
International Affairs in Anthropology 71
International Affairs in Economics 71
International Affairs in Foreign Languages 71
International Affairs in History 71
International Affairs in Political Science 71
Journalism 73
Kinesiology and Physical Education 31
Landscape Horticulture 115
Latin 75
Marine Science 117
Mass Communication 75
Mathematics 76
Mechanical Engineering 51
Mechanical Engineering Technology 52
Microbiology 99
Modern Languages 77
Molecular and Cellular Biology 99
Music 78
Music Education 79
New Media 81
Nursing 24
Parks, Recreation and Tourism 119
Performance 81
Philosophy 82
Physics 83
Political Science 84
Psychology 85
Public Management 25
Pulp and Paper Technology 52
Resource and Agribusiness Management 120
Romance Languages 86
Secondary Education 33
Social Work 27
Sociology 86
Spanish 87
Studio Art 87
Surveying Engineering Technology 54
Sustainable Agriculture 122
Theatre 88
University Studies 135
Wildlife Ecology 123
Women's Studies 89
Wood Science and Technology 124
Zoology 101

THE UNIVERSITY OF MAINE ACADEMIC MINORS

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Animal and Veterinary Sciences 124
Anthropology 89
Aquaculture 125
Art History 87
Astronomy 87
Biochemistry 125
Biology 125
Biomedical Engineering 56
Botany 125
Business Administration 28
Canadian Studies 138
Chemistry 90
Child Development and Family Relations 35
Classical Studies 139
Communication 90
Computer Science 90
Construction Management Technology 55
Dance 90
Digital Systems 55
Ecology and Environmental Sciences 125
Economics 90
Electronic Instrumentation 55
Elementary Education 35
Engineering Entrepreneurial 55
English 90
Enrironmental Mangement and Policy 125
Environmental Quality 55
Equine Studies 125
Exercise Science 35
Fisheries 125
Fluid Mechanics 55
Food Science 126
Forest Ecosystem Science 126
Forest Products 126
Forest Recreation Management 126
Franco American Studies 140
French 91
Geological Sciences 126
German 91
History 90
Human Nutrition 127
International Affairs 90
Landscape Horticulture 127
Latin 91
Latin American Studies 141
Linguistics 91
Marxist and Socialist Studies 141
Mathematics 91
Medieval and Renaissance Studies 142
Microbiology 127
Modern and Classical Languages 91
Molecular and Cellular Biology 127
Museum Education 91
Museum Studies 91
Music 91
Native American Studies 92
Naval Science 55
Philosophy 92
Physics 92
Plant Science 127
Political Science 92
Pre-Medical 136
Process Engineering 55
Psychology 92
Public Management 28
Public Relations 92
Pulp and Paper Technology 55
Religious Studies 142
Resource and Agribusiness Management 127
Rhetoric and Writing 93
Secondary Education 35
Sociology 93
Soil Science 127
Solid Mechanics 55
Spanish 91
Structures 55
Studio Art 93
Sustainable Agriculture 128
Theatre 93
Thermodynamics 55
Water Resources 56
Women's Studies 93
Zoology 128

College of Business, Public Policy and Health

The College of Business, Public Policy and Health offers nationally recognized programs in business administration, nursing, public management and social work. Each of these professional programs provides students with an education based on a strong liberal arts foundation. This broad education is designed to prepare students for successful careers in a rapidly changing global environment while providing them with the skills needed for lifelong learning.

ACADEMIC PROGRAMS:

Bachelor of Arts in:
- Public Management
- Social Work

Bachelor of Science in:
- Business Administration
- Nursing

Minors:
- Accounting
- Business Administration
- Public Management

REQUIREMENTS:

In order to graduate from the College of Business, Public Policy and Health students must be in good academic standing (accumulative average at least 2.0) and the following requirements must be satisfied:

The School of Business requires a minimum 2.0 accumulative grade point average in all BUA and ECO courses.

The School of Nursing requires 126 credits with a minimum 2.0 accumulative grade point average in the major.

The Department of Public Administration requires a 2.5 average in all PAA courses.

The School of Social Work requires a 2.5 overall grade point average.

NOTES:

Entrance Requirements:

Entrance requirements for the degree programs in the College of Business, Public Policy and Health are noted in the Admission section of this catalog. Please note that admission requirements differ for the business, nursing, public management and social work majors.

Academic Advising:

Faculty in the College of Business, Public Policy and Health are committed to ensuring that students receive thoughtful guidance throughout their academic careers. Each student will be assigned a faculty advisor in his/her intended major. Students may request a change in advisor at any time.

Declaring the Major:

Students applying for admission to the College of Business, Public Policy and Health must designate a major on the application form. The four majors within the College are: Business Administration, Nursing, Public Management and Social Work. Please read the appropriate section in this catalog for more information about the specific majors.

Changing Colleges:

Students currently enrolled in another baccalaureate program at the University of Maine may change their enrollment to the College of Business, Public Policy and Health provided they have the required grade point average and are in good academic standing on the effective date of change. For students changing colleges, the Business School, the Department of Public Administration, the School of Nursing and the School of Social Work require a 2.0 accumulative grade point average. Students who wish to change Colleges should contact the associate dean of their current college for procedures.

Transfers:

Students from other Universities generally are accepted as transfer students if they have completed a minimum of 12 semester credits with the required grade point average. For students transferring to the Business School and the Department of Public Administration, the required grade point average is 2.0. For students with junior standing or higher (54 degree hours earned) transferring to the School of Social Work and the School of Nursing, the required grade point average is 2.5 for Social Work and 2.6 for Nursing. Students applying for transfer will receive an evaluation of their transcripts indicating course equivalencies for any courses taken at other institutions.

The Maine Business School adheres to University-wide transfer policies. In addition, as an institution accredited by AACSB International-the Association to Advance Collegiate Schools of Business, the Maine Business School evaluates transfer credit consistent with AACSB accreditation policies. These policies emphasize the need for business courses to be built upon a foundation of general education courses taken in the first and second years. Based on this philosophy, the following transfer policies apply:

1. Transfer credit is granted for business courses taken at institutions accredited by AACSB.
2. For courses taken at institutions not accredited by AACSB, transfer credit is not granted automatically for business courses taken during the first and second years, with the exception of Principles of Financial Accounting and Managerial Accounting, the Legal Environment of Business, and Introduction to Business. However, a transfer student from an institution not AACSB-accredited, but designated as regionally accredited (including other campuses of the University of Maine System), 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 receive credit for the course by successfully completing a proficiency examination.
3. Business courses taken at the upper-division level at an institution not accredited by AACSB, but regionally accredited, may be accepted for credit if all prerequisite requirements (including junior standing) have been met. If prerequisite and junior standing requirements have not been met, the student may earn credit by successfully completing a proficiency examination once requirements have been met.

Proficiency examinations must be successfully completed prior to enrolling in any advanced courses for which the course in question is a prerequisite.

Students currently enrolled at the University of Maine who wish to take courses at another institution must obtain written approval from the Associate Dean's office prior to registration. Students may not take courses at two-year institutions after completing the sophomore year.

The Office of Student Records and the Associate Dean's office will evaluate all courses for which transfer credit is requested.

Prospective CPA students:

Students who intend to sit for the CPA (Certified Public Accounting) examination

must have completed 150 credits including a baccalaureate degree and a minimum of 15 credits in accounting. One option recommended for University of Maine students is to complete the baccalaureate degree in business with a concentration in accounting and then complete the UMaine MBA or MS in Accounting. Students should strongly consider an internship in accounting sometime during their program. Please contact the Maine Business School for other options.

Program Contacts

Business Administration
Diana Lawson
211 Donald P. Corbett Business Building
(207) 581 - 1968
business@maine.edu

Nursing
Therese Shipps
210 Dunn Hall
(207) 581 - 2599
tshipps@maine.edu

Public Administration
G. Thomas Taylor
13 B North Stevens Hall
(207) 581 - 1873
ttaylor@maine.edu

Social Work
Gail Werrbach
101 Social Work Building
(207) 581 - 2385
gail.werrbach@umit.maine.edu

Business Administration

The undergraduate business program prepares students to participate in a global economy that increasingly relies on computer-based technology. The program provides the broad education necessary for successful business management in a rapidly changing environment. The program is designed to develop skills and attitudes of mind that will enable students to cope successfully with the emerging problems of business management in the years ahead and to develop a habit of lifelong learning.

School/Departmental Requirements:

To receive a B.S. in Business Administration degree at the University of Maine, a student must fulfill the senior year residency requirement. This requirement stipulates that the last 30 degree credits in the academic program must be completed at the University of Maine. Further, AACSB requires that at least 50% of the total credits earned in business must be taken at the University of Maine.

All course work taken in business and economics must also be completed with a 2.0 ("C") cumulative average for a student to be eligible for a degree.

300-Level Course Policy:

All students must have Junior Standing (54 or more degree credits completed) and have met the prerequisites in order to take any 300-level BUA courses. BUA 201, BUA 202, and BUA 220 require Sophomore Standing (24 or more degree credits).

Implementation of this program is in three general phases:

1. The General Foundation

During the first two years students acquire a broad education in the liberal arts and sciences. Through courses such as English, communications, international studies, mathematics, computer science, economics and psychology, students build a strong foundation for future business course work and lifelong learning.

2. The Business Core

The core business courses, most of which are taken during the junior year, provide an understanding of the functional areas common to most businesses. This core program includes courses in accounting, finance, law, marketing, management, information systems, production, international business and business policy.

3. The Fields of Concentration

During the junior and senior year students acquire more advanced knowledge of a major field by taking 15 credits beyond the introductory level in a chosen concentration *(Accounting - 18 credits)*.

By the time of graduation, students in the Maine Business School will have acquired a broad background in the liberal arts and sciences, a basic knowledge of the major functional areas of business, and advanced knowledge in a particular field.

General Foundation Subjects (60 credits)

Note: No more than 6 credits of mathematics and 9 credits of economics may be taken as Subjects part of these 60 credits.

1. Humanities and Fine Arts

CMJ 103 - Fundamentals of Public Communication	3
ENG 101 - College Composition	3
ENG 317 - Business and Technical Writing	3

At least 3 of the remaining 9 credits must have an ENG designation. The remainder must be selected in art, communications, the classics, English, foreign languages, history, journalism, literature, music, philosophy, and theater. These electives should be selected to satisfy the university-wide general education requirements and the Business School's international area studies requirement. This requirement in international area studies consists of one semester study abroad, or two semesters of study in a foreign language, or a two-course sequence with an international focus as determined by the School of Business.

2. Social and Behavioral Sciences (15 credits)

ECO 120 - Principles of Microeconomics	3
ECO 121 - Principles of Macroeconomics	3
PSY 100 - General Psychology	3

Only one additional 3-credit economics course may be taken in partial fulfillment of this requirement. The remaining 6 credits must be taken in anthropology/geography, Black Studies, Canadian Studies, Native American Studies, political science, psychology, sociology or womens studies. These credits should be selected to satisfy university-wide general education requirements and international area studies requirements. Students concentrating in International Business must take POS 120 as a social science elective.

3. Mathematics and Science (15 credits)

COS 211 - Principles of Data Processing(Recommended)	3
or COS 220 - Introduction to Computer Science I (for students planning to concentrate in Management Information Systems)	3
MAT 115 - Applied Mathematics for Business and Economics	3
or MAT 126 - Calculus I	4
MAT 215 - Introduction to Statistics for Business and Economics	3
or MAT 232 - Principles of Statistical Inference	3

The remaining 6 credits must be taken to satisfy the university-wide sciences requirement. Courses must be selected from the approved list of general education science courses in such fields as animal and veterinary science, aquaculture, astronomy, biology, botany, chemistry, ecology and, entomology, environmental sciences, food sciences, geology, horticulture, physics or plant science. At least one science course must include a laboratory.

4. Outside Electives (12 credits)

With the exception of mathematics, courses in any field and in new media, 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 (9) credits. Students should use these electives to help complete the university-wide general education requirements. Students planning to concentrate in Management Information Systems must take COS 220.

Core Requirements in Business (30 credits)

BUA 201 - Principles of Financial Accounting I 3
BUA 202 - Principles of Managerial Accounting 3
BUA 220 - The Legal Environment of Business 3
BUA 325 - Principles of Management and Organization 3
BUA 335 - Principles of Management Information Systems 3
BUA 337 - Production and Operations Management 3
BUA 343 - Introduction to International Business 3
BUA 350 - Business Finance 3
BUA 370 - Marketing 3
BUA 449 - Administrative Policy and Business Environment 3

Field of Concentration (15 - 18 Credits)

All students must complete a field of concentration in at least one area of Business Administration: Accounting, Finance, Management, Marketing, or Management Information Systems. International Business may be chosen as a second area of concentration.

Accounting (18 credits)

BUA 301 - Intermediate Accounting I 3
BUA 302 - Intermediate Accounting II 3
BUA 305 - Cost Accounting 3
BUA 310 - Auditing 3
BUA 312 - Federal Taxation of Individuals 3
One of the following:
BUA 306 - Advanced Managerial Accounting 3
or BUA 409 - Accounting for Governmental and Not-For-Profit Entities 3

Finance (15 credits)

BUA 351 - Corporate Treasury Dynamics 3
BUA 352 - Financial Institutions 3
BUA 353 - Investment Strategy 3
BUA 454 - Financial Derivatives 3
And any one of the following:
BUA 301 - Intermediate Accounting I 3
BUA 305 - Cost Accounting 3
BUA 364 - Database Management Systems 3
BUA 368 - Electronic Commerce 3
BUA 455 - International Corporate Finance 3
ECO 339 - International Finance 3
ECO 372 - State and Local Government Finance 3
ECO 420 - Intermediate Microeconomics 3

International Business (15 credits)

BUA 376 - International Marketing 3
BUA 445 - International Management 3
BUA 455 - International Corporate Finance 3
And any two of the following:
BUA 328 - Canadian/U.S. Business: A Comparison 3
ECO 339 - International Finance 3
Other electives as approved by the Associate Dean.

Management (15 credits)

BUA 326 - Dynamics of Organization and Behavior 3
BUA 330 - Personnel Management and Industrial Relations 3
BUA 331 - Labor-Management Relations 3
BUA 445 - International Management 3
And any one of the following:
BUA 327 - Seminar in Contemporary Management Problems 3
BUA 328 - Canadian/U.S. Business: A Comparison 3
BUA 364 - Database Management Systems 3
BUA 366 - Decision Support Systems for Management 3
BUA 374 - Sales Management 3
BUA 375 - Retail Management 3
BUA 441 - Entrepreneurship and The Small Business 3

Management Information Systems (15 credits)

BUA 363 - Network Design and Applications 3
BUA 364 - Database Management Systems 3
BUA 368 - Electronic Commerce 3
BUA 465 - Information Systems Development 3

Marketing (15 credits)

BUA 376 - International Marketing 3
BUA 378 - Marketing Research 3
BUA 382 - Consumer Behavior 3
BUA 480 - Managerial Marketing 3
And any one of the following:
BUA 366 - Decision Support Systems for Management 3
BUA 372 - Advertising 3
BUA 374 - Sales Management 3
BUA 375 - Retail Management 3

Free Electives (15 credits)

These can be taken in any area including business, mathematics, and economics. Students concentrating in Accounting only need 12 credits.

Suggested Curriculum

All concentrations, first two years:

First Year - First Semester

ENG 101 - College Composition 3
PSY 100 - General Psychology 3
General Education: Western Cultural Tradition 3
International Area Studies Elective 3
Outside Elective 3

First Year - Second Semester

CMJ 103 - Fundamentals of Public Communication 3
MAT 115 - Applied Mathematics for Business and Economics 3
General Education: Artistic and Creative Expression 3
International Area Studies Elective 3
General Education: Laboratory or Applied Science 3

Second Year - First Semester

BUA 201 - Principles of Financial Accounting I 3
ECO 120 - Principles of Microeconomics 3
MAT 215 - Introduction to Statistics for Business and Economics 3
General Education: Population and the Environment. 3
or BUA 220 - The Legal Environment of Business. 3
English Elective 3

Second Year - Second Semester

BUA 202 - Principles of Managerial Accounting 3
BUA 220 - The Legal Environment of Business 3
or General Education: Population and the Environment. 3
ECO 121 - Principles of Macroeconomics 3
Computer Science Elective (COS 211 Principles of Data Processing, recommended) 3
General Education: Laboratory or Applied Science 3

Accounting Concentration, last two years:

Third Year - First Semester

BUA 301 - Intermediate Accounting I 3
BUA 305 - Cost Accounting 3
BUA 312 - Federal Taxation of Individuals 3
BUA 350 - Business Finance 3
Free Elective 3

Third Year - Second Semester

BUA 302 - Intermediate Accounting II 3
BUA 325 - Principles of Management and Organization 3
BUA 335 - Principles of Management Information Systems 3
ENG 317 - Business and Technical Writing 3
Free Elective 3

Fourth Year - First Semester

BUA 310 - Auditing 3
BUA 337 - Production and Operations Management 3
BUA 343 - Introduction to International Business 3
BUA 370 - Marketing 3
Free Elective 3

Fourth Year - Second Semester

BUA 449 - Administrative Policy and Business Environment 3

Outside Electives 6
Accounting Elective 3
Free Elective 3

Finance Concentration, last two years:
Third Year - First Semester
BUA 325 - Principles of Management and Organization 3
BUA 335 - Principles of Management Information Systems 3
BUA 350 - Business Finance 3
Free Elective 3
Outside Elective 3

Third Year - Second Semester
BUA 337 - Production and Operations Management 3
BUA 343 - Introduction to International Business 3
BUA 351 - Corporate Treasury Dynamics 3
BUA 370 - Marketing 3
Free Elective 3

Fourth Year - First Semester
BUA 352 - Financial Institutions 3
BUA 353 - Investment Strategy 3
ENG 317 - Business and Technical Writing 3
Free Elective 3
Outside Elective 3

Fourth Year - Second Semester
BUA 449 - Administrative Policy and Business Environment 3
BUA 454 - Financial Derivatives 3
Finance Elective 3
Free Electives 6

International Business, last two years:
All students concentrating in International Business must also complete requirements in accounting, finance, management, marketing or management information systems.

Third Year - First Semester
BUA 325 - Principles of Management and Organization 3
BUA 343 - Introduction to International Business 3
BUA 350 - Business Finance 3
BUA 370 - Marketing 3
Elective 3

Third Year - Second Semester
BUA 335 - Principles of Management Information Systems 3
BUA 337 - Production and Operations Management 3
BUA 445 - International Management 3
ENG 317 - Business and Technical Writing 3
Second concentration required course 3

Fourth Year - First Semester
BUA 376 - International Marketing 3
Second concentration required courses. 6
International Elective 3
Elective 3

Fourth Year - Second Semester
BUA 449 - Administrative Policy and Business Environment 3
BUA 455 - International Corporate Finance 3
International Corporate Finance. 3
Second concentration required course 3
International Elective. 3
Electives 3

Management Concentration, last two years:
Third Year - First Semester
BUA 325 - Principles of Management and Organization 3
BUA 335 - Principles of Management Information Systems 3
BUA 370 - Marketing 3
Outside Elective 3
Free Elective 3

Third Year - Second Semester
BUA 331 - Labor-Management Relations 3
BUA 337 - Production and Operations Management 3
BUA 350 - Business Finance 3
ENG 317 - Business and Technical Writing 3
Outside Elective 3

Fourth Year - First Semester
BUA 326 - Dynamics of Organization and Behavior 3
BUA 330 - Personnel Management and Industrial Relations 3
BUA 343 - Introduction to International Business 3
Free Electives 6

Fourth Year - Second Semester
BUA 445 - International Management 3
BUA 449 - Administrative Policy and Business Environment 3
Management Elective 3
Free Electives 6

Management Information Systems, last two years:
Third Year - First Semester
BUA 325 - Principles of Management and Organization 3
BUA 335 - Principles of Management Information Systems 3
BUA 350 - Business Finance 3
BUA 370 - Marketing 3
ENG 317 - Business and Technical Writing 3

Third Year - Second Semester
BUA 337 - Production and Operations Management 3
BUA 343 - Introduction to International Business 3
BUA 368 - Electronic Commerce 3
Electives 6

Fourth Year - First Semester
BUA 363 - Network Design and Applications 3
BUA 364 - Database Management Systems 3
Second concentration required course. 3
Electives 6

Fourth Year - Second Semester
BUA 449 - Administrative Policy and Business Environment 3
BUA 465 - Information Systems Development 3
Electives 6

Marketing Concentration, last two years:
Third Year - First Semester
BUA 325 - Principles of Management and Organization 3
BUA 343 - Introduction to International Business 3
BUA 350 - Business Finance 3
BUA 370 - Marketing 3
Free Elective 3

Third Year - Second Semester
BUA 335 - Principles of Management Information Systems 3
BUA 337 - Production and Operations Management 3
BUA 382 - Consumer Behavior 3
Outside Electives 6

Fourth Year - First Semester
BUA 376 - International Marketing 3
BUA 378 - Marketing Research 3
ENG 317 - Business and Technical Writing 3
Free Electives 6

Fourth Year - Second Semester
BUA 449 - Administrative Policy and Business Environment 3
BUA 480 - Managerial Marketing 3
Marketing Elective 3
Free Electives 6

Nursing

The School of Nursing curriculum provides study in liberal arts, sciences and the nursing major. The goal of this accredited program is to prepare a professional generalist practitioner of nursing who can assist individuals, families and groups to achieve and maintain optimal health. The program provides a foundation for graduate and continuing education in nursing and serves as a stimulus for continuing intellectual and personal development. At the completion of the program, graduates are qualified to take the Registered Nurse licensing exam.

Education for the practice of professional nursing demands a substantial knowledge of the social, behavioral and biological sciences as a theoretical base. Beginning in the sophomore year, nursing courses are taken

concurrently with courses from other disciplines, thus contributing to the development of the liberally educated practitioner. Clinical study begins at the end of Sophomore level courses and includes care of patients/clients in a variety of settings such as hospitals, community health agencies, long-term care facilities, homes, schools and industry.

The University of Maine School of Nursing has excellent faculty who are adept practitioners as well as competent teachers and researchers. Through their mentorship, students learn not only the skills to be a nurse, but also what it means to be a member of the profession with all the inherent responsibilities and accountabilities.

Nursing majors are required to have a health history and physical examination and certain immunizations completed and must have a report on file at the School of Nursing before enrolling in clinical courses. In addition, cardiopulmonary resuscitation (CPR), for professional rescuers must be documented. Nursing majors must purchase uniforms and safety glasses before entry into the junior year. Since clinical learning experiences take place in a variety of settings and geographic locations, it is the student's responsibility to provide transportation to sophomore, junior and senior clinical experiences. Professional liability and health insurance is strongly recommended for all nursing students.

All generic senior students in the School of Nursing will be required to take achievement testing as arranged by the School of Nursing. Currently the School is utilizing the Mosby AssessTest. The cost of this testing (currently $35.00) is the responsibility of the student and should be included in financial planning for the senior year. The time for this exam will be arranged by faculty during the latter part of the spring semester of the senior year.

The School of Nursing sponsors a Recognition Ceremony for graduating seniors each May. Although the majority of expenses are paid by the school, some expenses are the responsibility of the student. Students are also responsible for the purchase of the School of Nursing pin. These expenses may vary each year and students need to check with the School of Nursing office for current costs.

All students enrolled in the nursing program must achieve a minimum accumulative grade point average of 2.60 in order to progress to the 300 level nursing courses. Nursing students must earn a minimum grade of "C" in all nursing courses. A student who earns a grade lower than "C" in any required course in the nursing program may repeat that course one time only. All nursing (NUR) courses are sequential and must be passed with a grade of "C" before progression to the next semester is permitted. In order to be considered for admission by transfer to the Nursing program, applicants must have at least a 2.6 grade point average. Refer to the School of Nursing Student Handbook for additional grading and progression policies.

The R.N. Studies program differs from the traditional curriculum in that assessment of prior learning in nursing is considered as part of the student's program of study. Knowledge and skills in selected areas can be demonstrated through direct articulation or through specific examinations. A minimum of 30 nursing credits are given for prior education which leads to licensure as an RN as long as clinical competence has been maintained.

Nursing transfer students:

A student transferring from a nursing or other health professional program to the School of Nursing baccalaureate program is required to provide a letter of reference from a faculty member teaching in the student's most recently completed semester and a statment from the head of the clinical program stating that the student is in good standing. These materials are to be mailed directly to the School of Nursing from the originating institution.

Suggested Curriculum for the BS in Nursing

First Year - First Semester

BIO 100 - Basic Biology	4
BMB 207 - Fundamentals of Chemistry	4
ENG 101 - College Composition	3
NUR 101 - Issues and Opportunities in Nursing	1
PSY 100 - General Psychology	3

First Year - Second Semester

BIO 208 - Anatomy and Physiology	4
BMB 208 - Elementary Physiological Chemistry	4
SOC 101 - Introduction to Sociology	3
General Education	3
Math	3

Second Year - First Semester

BMB 300 - General Microbiology	3
BMB 305 - General Microbiology Laboratory	2
CHF 201 - Introduction to Child Development	3
(or equivalent)	
MAT 232 - Principles of Statistical Inference	3
General Education	3
Philosophy	3

Second Year - Second Semester

FSN 280 - Human Nutrition for the Health Professions	3
NUR 200 - Professional Concepts in Nursing	2-3
NUR 300 - Health Assessment Through the Lifespan	4
NUR 303 - Pathophysiology	3
General Education	3

May Term

NUR 201 - Fundamentals of Nursing Care Management	2

Third Year - First Semester

NUR 301 - Nursing Care Management of Adults I	3-6
NUR 404 - Fundamentals of Pharmacology	3
PSY 312 - Abnormal Psychology	3
General Elective	3

Third Year - Second Semester

NUR 308 - Nursing Care Management of Individuals and Families Across the Lifespan	9
NUR 310 - Health Related Research	1-3
Nursing Elective	3

Fourth Year - First Semester

NUR 440 - Nursing Care Management of Adults II	3
NUR 442 - Mental Health and Community Nursing Care Management Concepts I	2-5
NUR 444 - Management and Leadership in Health Care System	2

Fourth Year - Second Semester

NUR 441 - Nursing Care Management of Adults III	2
NUR 443 - Mental Health and Community Nursing Care Management Concepts II	2
NUR 447 - Clinical Reflection Seminar	1
NUR 455 - Senior Clinical Practicum	4

Public Management

The Department's undergraduate B.A. in Public Management program, founded in 1945, is the oldest public management major in the nation. The program has particular strength in state and local government, policy, and administration. Founded in 1968, the Master's of Public Administration is offered in Orono and Augusta. It is accredited by the National Association of Schools of Public Affairs and Administration, and is one of approximately 150 accredited graduate programs in the nation. The Department also offers the Ph.D. in Public Administration through the Individualized Ph.D. Program of the University.

Students enjoy three advantages through their work in the Department. First, the faculty are fundamentally committed to teaching and to helping students learn about democracy and experience work in the public sector. Second, faculty enjoy national reputations for their research and scholarship; thus, the degree is competitive throughout the country. Third, public service is central to the mission; the programs provide a variety of opportunities for

practical learning and participation through internship opportunities.

Students of public administration examine government and nonprofit organizations to see how those organizations operate on a day-to-day and year-to-year basis. This gives the Department of Public Administration a three-fold mission:

- First, to prepare students for productive, fulfilling careers in public and nonprofit administration - particularly in the dynamics of state and local government.
- Second, to promote an understanding and appreciation of the functions and value of government in society.
- Third, to contribute to the improvement of governance and societal institutions.

The Department's programs address questions of governance in democratic society, political and ethical values in public service, the operation of public organizations, and formulating, implementing, and evaluating the consequences of public policies.

The undergraduate major in public management combines comprehensive, nationally recognized instruction within a liberal arts base and significant opportunities for practical experience. The major introduces many of the skills necessary for understanding and participating in public affairs, including critical thinking, effective speaking and writing, and research and analytical capabilities.

The Department has continuing relationships with academic and research units across the campus and with professional organizations outside the university system. One of these is the Margaret Chase Smith Center for Public Policy, through which students and faculty have engaged in many research endeavors. Looking to the future, another is the Business School's William S. Cohen Center for International Policy and Commerce. Professional and related organizations include the American Society for Public Administration, Maine Municipal Association, and Eastern Maine Development Corporation, among others. The Department engages in a range of research and public service projects for the State of Maine, its communities, and beyond, a series of community policing studies, the Maine Campus Compact, analyses of the impact of state and local interest groups on Supreme Court decisions, a comparative state study on home rule in America, and a range of workshops and institutes for employees in the public and nonprofit sectors.

Public Service career opportunities have been expanding dramatically in response to the changing needs of our dynamic society. Graduates have entered careers at all levels of government - local, regional, state, national and international. They have been employed in general administrative positions as well as in specialized positions such as budgeting and financial management, public relations, human resources management, and program evaluation. Typical positions can be found in city and town management, state government, a broad range of planning agencies and commissions, and the federal government. Many students have found rewarding careers in small businesses, large corporations, interests groups, and hospitals and other nonprofit organizations. Many of our students continue their education by entering the Master's Program in Public Administration, other graduate programs in the social sciences, law school, or graduate programs in business.

Public servants are endowed with the public trust and, therefore, are held at the highest standards of ethical and professional conduct. The Department of Pubic Administration expects all of its students to uphold the highest ethical standards. It is the responsibility of students to be aware of the Department's policy on ethical standards, sanctions and appeal process. All of the above are available at the Department of Public Administration Office in 239 North Stevens Hall. Violation of these standards can result in dismissal from the Department and its courses, as well as a failing grade for a course.

Requirements

- Students must have a minimum grade point average of 2.0 in order to declare a PAA major.
- Must have a minimum of 33 credits in courses designated "PAA" with a grade of C or better.
- Must have a minimum grade point average of 2.5 in all PAA courses.

Prerequisites

ECO 120 - Principles of Microeconomics 3
or ECO 121 - Principles of Macroeconomics 3
PAA 100 - Introduction to Public Administration 3
or POS 100 - American Government 3

Core Courses

The following five core courses are required by all majors:

PAA 200 - Public Management 3
PAA 315 - Statistics in Public Administration 3
PAA 340 - Public Financial Management 3
PAA 350 - Human Resources in Public Service 3
PAA 390 - Technical Writing and Communication in Public Service 3

Required Areas

State and Local Government—*Choose at least two of the following:*

PAA 233 - American City 3
PAA 370 - Local Government Administration 3
POS 203 - American State and Local Government 3

Public Policy—*Choose at least two of the following:*

PAA 220 - Introduction to Public Policy 3
PAA 327 - Environmental Policy, Management and Regulation 3
PAA 425 - Health Care System Management 3

Law and the Public Service—*Choose at least one course from the following:*

PAA 405 - Administrative Law 3
PAA 410 - Local Government Law 3
POS 282 - Introduction to American Law 3
POS 383 - American Constitutional Law 3

Capstone: Choose at least one course from the following:

INT 494 - (PAA, POS) Field Experience Ar
PAA 493 - Public Administration Internship Ar
PAA 495 - Municipal Government Internship Ar

Electives

Any two PAA courses from Required Areas or Capstone (see above) that were not used to meet the major requirements OR at least two courses from the following:

PAA 380 - Police and the Community 3
PAA 400 - Issues in Public Administration 3
PAA 409 - Governmental and Nonprofit Accounting 3
PAA 430 - Organizational Change in Public Service 3

Concentrations: Students are encouraged to develop concentrations in specific topic areas - for example, in local or state government, health policy, environmental policy, economic policy, etc. In addition to enriching the undergraduate experience, such concentrations will improve opportunities for public sector careers and graduate school. The Department enjoys a long history and excellent reputation related to local government and offers two concentrations: local government administration and criminal justice administration. Related courses inside the Public Administration Department are PAA 233, 370, 380, 400, 405, 409, 410, 493 and 495. Related courses outside the Department include SOC 202, 214, 215, 314 and 338; POS 383 and 384; PSY 312 and 330; PHI 231 and 244; REP 381, 422 and 474; and INT 330.

Suggested Curriculum for the BA in Public Management

First Year - First Semester

ENG 101 - College Composition 3
or ENG 129 - Topics in English 3

PAA 100 - Introduction to Public Administration 3
or POS 100 - American Government 3
General Education: Western Cultural Tradition 3
General Education: Mathematics 3
Elective(recommend COS 101, 102 and 103 *or* COS 120, CMJ 103) 3

First Year - Second Semester
PAA 200 - Public Management 3
General Education: Artistic and Creative Expression 3
General Education: Cultural Diversity and International Perspective 3
Electives 6

Second Year - First Semester
ECO 120 - Principles of Microeconomics 3
or ECO 121 - Principles of Macroeconomics 3
PAA 350 - Human Resources in Public Service 3
Public Policy Area Course 3
State and Local Government Area Course 3
Elective 3

Second Year - Second Semester
PAA 390 - Technical Writing and Communication in Public Service 3
General Education: Population and the Environment (recommend PAA 327 Environmental Policy, Management and Regulation) 3
General Education: Laboratory Science 4
Electives 6

Third Year - First Semester
PAA 340 - Public Financial Management 3
State and Local Government Area Course 3
General Education: Science 3
Electives 6

Third Year - Second Semester
PAA 315 - Statistics in Public Administration 3
Public Policy Area Course 3
Law and the Public Service Area Course 3
General Education: Writing Competency (recommend ENG 317) 3
Elective 3

Fourth Year - First Semester
PAA Elective 3
Capstone Course 3
Electives 9

Fourth Year - Second Semester
PAA Elective 3
Electives 11

Social Work

The social work major is designed to prepare students for beginning-level generalist professional social work practice in a broad range of social work settings. The program is accredited by the Council on Social Work Education. Completion of the Bachelor of Arts in Social Work qualifies graduates to sit for the Licensed Social Worker credential in the State of Maine and in many other states.

Social workers help people cope with complex interpersonal and social problems, obtain the resources they need to live with dignity, and work for the social changes necessary to make society more responsive to people's needs. Based on a strong liberal arts foundation, social work majors acquire the knowledge, skills and values necessary for the professional practice of social work.

Graduates of the program are employed in public and voluntary social agencies in settings such as child and adult protective services, hospitals, mental health centers, schools, correctional institutions, nursing homes and many others. B.A.S.W. graduates are eligible to apply for Advanced Standing in many graduate programs in social work. Advanced standing gives graduate course credit for work completed in the undergraduate social work program, thus shortening the time needed to complete the requirements for the Master of Social Work degree.

The undergraduate curriculum in Social Work builds upon a solid liberal arts foundation with courses in human behavior and the social environment, social welfare policies and issues, social work research, social work practice and field instruction. During the junior and senior years, students complete internships in programs such as child protective services, medical social work, adolescent pregnancy prevention services, geriatric social work, community mental health services, and community organization. Sequencing of courses which are a prerequisite for enrollment into the Junior Year Field Experience is important.

Prerequisites

Applicants should be able to use a basic word-processing computer program.

Academic credit for life experience and previous work experience cannot be given in lieu of the senior field practicum or professional foundation courses.

The following courses are a prerequisite for enrolling in the practice sequence:
BIO 100 - Basic Biology 4
BIO 208 - Anatomy and Physiology 4
ENG 212 - Persuasive and Analytical Writing 3
or ENG 317 - Business and Technical Writing 3

One of the following PHI courses in Ethics:
PHI 102 - Introduction to Philosophy 3
PHI 230 - Ethics 3
PHI 240 - Social and Political Philosophy 3
PHI 344 - Theories of Justice 3
POS 100 - American Government 3
PSY 100 - General Psychology 3
SOC 101 - Introduction to Sociology 3
SWK 101 - Opportunities in Social Work 1
SWK 320 - Values, History and Practice in Social Work and Social Welfare 3
SWK 330 - Contemporary Issues in Diversity and Pluralism 3
or SOC 201 - Social Inequality. 3

Requirements For the Social Work Major

In addition to the courses which are required for enrollment into the Social Work practice sequence the following courses must be completed in order to earn the B.A.S.W. degree:
SWK 350 - Human Behavior and the Social Environment I 3
SWK 351 - Human Behavior in the Social Environment II 3
SWK 361 - Social Work Methods I 3
SWK 395 - Beginning Field Experience in Social Work (2 semesters) 1-3
SWK 440 - Social Welfare Policy and Issues 3
SWK 462 - Social Work Methods II 3
SWK 463 - Social Work Methods III 3
SWK 491 - Methods of Social Work Research 3
SWK 495 - Field Practicum in Social Work (2 semesters) 1-6

Correct course sequencing is essential for the Social Work major. Social Work majors should become familiar with information on course sequencing and other requirements described in detail in the B.A.S.W. Program Guide. Social Work majors are encouraged to review their program course plan with their academic advisors each semester to insure timely and efficient progress through their program.

Ethics

In addition to academic expectations, Social Work students are expected to demonstrate professional behavior consistent with the ethics of the Social Work profession as reflected in the Code of Ethics of the National Association of Social Workers. Behavior contrary to these standards will be cause for review of the student's admission to or continuation in the Social Work major.

Behavior

Since the role of the social worker involves helping people from a variety of backgrounds and with a range of problems, it is important that Social Work students have

the emotional and psychological resources to render effective assistance to those in need. After admission to the major, students who demonstrate behaviors which suggest that their own difficulties are not sufficiently resolved to be able to help and support others at this time may be asked to seek professional help or to withdraw from the program.

Admission to the Practice Sequence

In the fall semester of the junior year, students must apply for permission to enroll in the first course of the Practice Sequence, SWK 361 - Social Work Methods I. To be admitted to the practice sequence, a student must have completed the social work prerequisites and/or be currently enrolled in any not yet completed. For full acceptance into the sequence, the student must have achieved a grade point average of 2.5 or higher. Application forms are distributed in September and may be obtained from the School of Social Work. Completed application packets are due on or before October 15 of the student's junior year. Only complete applications packets are reviewed by the BASW Admissions Committee.

Field Practicum

Study for the Social Work major includes courses in theory, research, and practice. Study culminates during the senior year in a 400-hour supervised practicum in a social agency. In the practicum, students refine and integrate their academic knowledge and practice skills. Prior to the field practicum, students must complete the junior level field experience (SWK 395).

Graduation Requirements

A grade of "C-" or better is mandatory in all prerequisite courses, a grade of "C" in all required courses, and a grade point average of 2.50 or higher must be maintained. Students must conduct themselves in a professional manner consistent with the Code of Ethics of the National Association of Social Workers.

University Affiliated Program

Social Work majors with particular interest in Disability Studies may apply for participation in the University Affiliated Program (UAP), an interdisciplinary curriculum. UAP students do their field practicum in agencies serving people with developmental disabilities and upon completion of the UAP requirements receive a Certificate of Completion in addition to the Bachelor of Arts degree in Social Work. (See Disability Studies.)

Master of Social Work Program

The School of Social Work offers graduate study leading to the Master of Social Work (M.S.W.) degree (see Graduate Catalog for more information).

Suggested curriculum for the B.A. in Social Work

Social work courses listed following an asterisk (*) must be taken during the semester indicated.

First Year - First Semester

ENG 101 - College Composition	3
POS 100 - American Government	3
SOC 101 - Introduction to Sociology	3
SWK 101 - Opportunities in Social Work	1
General Education: Artistic and Creative Expression	3
Elective	3

First Year - Second Semester

PHI 102 - Introduction to Philosophy	3
or PHI 230 - Ethics	3
or PHI 240 - Social and Political Philosophy	3
or PHI 344 - Theories of Justice	3
PSY 100 - General Psychology	3
SWK 330 - Contemporary Issues in Diversity and Pluralism	3
or SOC 201 - Social Inequality	3
General Education: Population and Environment	3
Elective	3

Second Year - First Semester

BIO 100 - Basic Biology	4
SWK 320 - Values, History and Practice in Social Work and Social Welfare	3
Electives	6
General Education: Mathematics	3

Second Year - Second Semester

BIO 208 - Anatomy and Physiology	4
General Education: Mathematics	3
Electives	9

Third Year - First Semester

(SWK 350, 395, and 491 must be taken during this semester.)

ENG 212 - Persuasive and Analytical Writing	3
or ENG 317 - Business and Technical Writing	3
SWK 350 - Human Behavior and the Social Environment I	3
SWK 395 - Beginning Field Experience in Social Work	1-3
SWK 491 - Methods of Social Work Research	3
Electives	3

Third Year - Second Semester

(SWK 351, 361, 395, and 440 must be taken during this semester.)

SWK 351 - Human Behavior in the Social Environment II	3
SWK 361 - Social Work Methods I	3
SWK 395 - Beginning Field Experience in Social Work	1-3
SWK 440 - Social Welfare Policy and Issues	3
Electives	3

Fourth Year - First Semester

(SWK 462, and 495 must be taken during this semester.)

SWK 462 - Social Work Methods II	3
SWK 495 - Field Practicum in Social Work	1-6
Electives	6

Fourth Year - Second Semester

(SWK 463, and 495 must be taken during this semester.)

SWK 463 - Social Work Methods III	3
SWK 495 - Field Practicum in Social Work	1-6
Elective	3

College of Business, Public Policy and Health Minors

Accounting: 24 credits

BUA 201 - Principles of Financial Accounting I	3
BUA 202 - Principles of Managerial Accounting	3
BUA 301 - Intermediate Accounting I	3
BUA 302 - Intermediate Accounting II	3
BUA 305 - Cost Accounting	3
BUA 310 - Auditing	3
BUA 312 - Federal Taxation of Individuals	3
Accounting Elective	3

Business Administration: 21 credits

BUA 201 - Principles of Financial Accounting I	3
BUA 325 - Principles of Management and Organization	3
BUA 350 - Business Finance	3
BUA 370 - Marketing	3
ECO 120 - Principles of Microeconomics	3
ECO 121 - Principles of Macroeconomics	3
BUA XXX One additional Business course for which prerequisites have been met.	3

Students planning on entering the MBA program in their fifth year should take:

BUA 202 - Principles of Managerial Accounting	3
or BUA 335 - Principles of Management Information Systems	3

Public Management: 18 credits

PAA 200 - Public Management	3
PAA 220 - Introduction to Public Policy	3
PAA 340 - Public Financial Management	3
PAA 350 - Human Resources in Public Service	3
Plus 2 additional PAA electives approved by the minor advisor.	6

College of Education and Human Development

The College of Education and Human Development prepares teachers and other educational and human service specialists to apply research-based knowledge and field-tested experience to help address the changing needs of schools, children and families. Undergraduate majors, with an array of academic specialization options, are offered in Elementary and Secondary Education, Kinesiology and Physical Education, and Child Development and Family Relations.

The college's educator preparation programs, emphasizing a diverse liberal arts background and highly relevant professional training, are accredited by the National Council for Accreditation of Teacher Education and approved by the Maine Department of Education. A partnership with area K-12 schools provides a realistic setting for teaching and learning. This school-based Professional Development Network and the college belong to the Holmes Partnership, a national consortium of research universities, their partner schools and national professional organizations, working collaboratively to improve the quality of K-12 schools and higher education academic programs.

The college is the home of the National Center for Student Aspirations, the Institute for the Study of Students At Risk, the Center for Early Literacy, and other widely recognized and utilized research, professional development and educational resource centers.

ACADEMIC PROGRAMS:

Bachelor of Science in:
Child Development and Family Relations
Elementary Education
With concentrations available in:
- Art
- Canadian Studies
- Disability Studies
- English
- Environmental Education
- French
- German
- History and Social Studies
- Honors
- Human Development
- International Affairs
- Mathematics
- Music
- Native American Studies
- Natural Sciences
- Peace Studies
- Performing Arts
- Philosophy
- Psychology
- Spanish
- Women's Studies

Kinesiology and Physical Education
- Athletic Training
- Health/Fitness
- Teaching/Coaching

Secondary Education
With concentrations available in:
- English
- Mathematics
- Modern Languages
- Science
- Social Studies

Minors:
- Child Development and Family Relations
- Elementary Education
- Exercise Science in Kinesiology and Physical Education
- Secondary Education

College of Education and Human Development Notes:

Teacher Certification:

The College of Education and Human Development's Elementary and Secondary Education program and the teacher preparation program in Kinesiology and Physical Education have been approved by the Maine Department of Education and the National Council for Accreditation of Teacher Education. Upon successful completion of these programs, students are recommended for Maine Teacher Certification in their area of study. Additionally, students need to successfully pass a state-identified examination to receive teacher certification in Maine.

Students who are minoring in Education and apply to take the additional course work towards certification will, upon graduation, apply to the Maine Department of Education, Division of Teacher Certification for transcript review. They must also take the examination identified by the Maine Department of Education's certification office.

Those holding Bachelor's degrees in the Liberal Arts and wishing to pursue careers in elementary or secondary education may apply to the Master of Arts in Teaching program. Those with a Bachelor's degree seeking to become Art, Music, or Physical Education teachers may apply for the Teacher Certification Option.

Note: The Maine Department of Education charges $50.00 for initial certification. Certification requirements are subject to change. For updated information, check with the Information Desk in the College of Education and Human Development. Undergraduate Contact: O.J. Logue.

About the College:

Students in Child Development and Family Studies explore the growth and development of individuals in the contexts of families, schools, and communities. Students who follow the appropriate curriculum are eligible to apply for Certified Family Life Educator Certification from the National Council on Family Relations. Study may focus on individuals at various times in the lifespan (e.g., early childhood, adolescence, and adulthood) with special attention to the family context. The family is studied in its various forms (e.g., single-parent, two-parent families, and foster families). Graduates are employed as professionals in fields such as family planning, gerontology, parent education, intervention programs, daycare, elementary schools, recreation and family respite care. An early Childhood Education Program has been re-introduced. Graduates also pursue advanced degrees in a variety of disciplines that focus on issues pertaining to children and families.

Graduate Programs:

The College offers a full range of graduate programs leading to the master's degree, the Certificate of Advanced Study (CAS) and the doctoral degree.

Graduate Program Contact
Dorothy Breen
110 Shibles Hall
(207) 581 - 2479
dorothy.breen@umit.maine.edu

Child Development and Family Relations

Requirements for Child Development and Family Relations Major:

CHF 200 and CHF 201 are required and each course must be passed with a grade of "C" or better. Students earning less than a "C" in either of these courses must re-take that course before taking upper level courses for which these are prerequisites.

Students are not restricted in their choice of electives to complete the 120 credits needed for graduation, but rather should consult with their advisor to select courses which best suit their professional goals.

Early Childhood Education

The Early Childhood Education Programs is seeking state approval for a certification program that will allow students to teach grades K-3. This program will prepare individuals to work with childcare and families from birth to age 8.

Transfer Policy

Students intending to transfer to the Child Development and Family Relations (CDFR) major from a baccalaureate degree program should have a GPA of 2.5. Students from an associate degree program should have a GPA of 2.8. Students should submit an application consisting of a current complete transcript of their college work, a resume, and an essay identifying their professional goals.

A faculty committee will review applications. Application packets are available from and should be returned to the office in 118 Merrill Hall.

Requirements for Child Development and Family Relations Major

To complete the Child Development and Family Relations degree requirements, all students must complete the following:

CHF 200 - Family Interaction	3
CHF 201 - Introduction to Child Development	3
CHF 423 - Professional Seminar in Individual and Family Studies	3
Child Development/Family Relations Electives	24

Note: 48 credits of CHF courses are the maximum that will count toward 120 credits needed to graduate.

Suggested Curriculum for B.S. in Child Development and Family Relations

First Year - First Semester

CHF 200 - Family Interaction	3
CHF 201 - Introduction to Child Development	3
ENG 101 - College Composition	3
General Education Requirement	3

First Year - Second Semester

CMJ 103 - Fundamentals of Public Communication	3
or CMJ 106 - Oral Communication of Literature	3
PSY 100 - General Psychology	3
CHF Elective	3
General Education Requirement	3

Second Year - First Semester

CHF Elective	3
General Education Requirements	13

Second Year - Second Semester

CHF Elective	3
General Education Requirements	13

Third Year - First Semester

CHF Elective.	6
General Education Requirements.	9

Third Year - Second Semester

CHF Elective.	6
General Education Requirements.	3
Electives	9

Fourth Year - First Semester

CHF 423 - Professional Seminar in Individual and Family Studies	3
Electives	6
General Education Requirements	3
CHF Elective	3

Fourth Year - Second Semester

CHF Elective	3-6
General Education Requirements.	3
Electives	9

Suggested curriculum for a B.S. in Early Childhood Education

First Year - First Semester

CHF 200 - Family Interaction	3
CHF 201 - Introduction to Child Development	3
PSY 100 - General Psychology	3
General Education Requirements	6

First Year - Second Semester

CMJ 103 - Fundamentals of Public Communication	3
or CMJ 106 - Oral Communication of Literature	3
ENG 101 - College Composition	3
MAT 107 - Elementary Descriptive Geometry	3
or MAT 108 - Elementary Numerical Mathematics From A Modern Perspective	3
or MAT 111 - College Algebra	3
General Education Requirements	3
Concentration Electives	3

Second Year - First Semester

CHF 203 - Practicum in Early Childhood Programs	3
or CHF 404 - Selected Topics in Child Development and Family Life	1-3
EDB 202 - Schools, Students, and Society	3
General Education Requirements and Concentration Electives (include one lab science here)	9

Second Year - Second Semester

CHF 331 - Cognitive Development	3
or EDB 221 - Educational Psychology	3
—Apply for teacher candidacy—	
General Education Requirements and Concentration Electives	9
General Education Requirements or Concentration Electives	12

Third Year - First Semester

CHF 203 - Practicum in Early Childhood Programs	3
or CHF 404 - Selected Topics in Child Development and Family Life.	1-3
CHF 321 - Curriculum for Young Children I	3
ERL 317 - Children's Literature	3
ERL 318 - Teaching Language Arts in the Elementary School	3
General Education Requirements and Concentration Electives	3

Third Year - Second Semester

CHF 203 - Practicum in Early Childhood Programs	3
CHF 322 - Curriculum for Young Children II	3
SED 402 - Adapting Instruction for Students with Disabilities	3
General Education Requirements and Concentration Electives	3

Fourth Year - First Semester

CHF 404 - Selected Topics in Child Development and Family Life	1-3
EDT 400 - Computers in Education	3
General Education Requirements and Concentration Electives	9

Fourth Year - Second Semester

CHF 421 - Student Teaching in Early Childhood	6
CHF 423 - Professional Seminar in Individual and Family Studies	3

Elementary Education

The undergraduate teacher education programs at the University of Maine are fully accredited by the National Council for Accreditation of Teacher Education. Students preparing to be elementary teachers spend the first two years building solid liberal arts background, technological competencies and subject area concentrations. They are also guided in the examination of public school classrooms and other settings that provide educational and related service to children and youth.

In their second year of study students apply for teacher candidacy by submitting a portfolio that includes a transcript of their academic work to date which reflects a grade point average of at least 2.5, an analysis of one school field experience with children or adolescents, documentation of technological competence, an essay reflecting upon an educational topic and documentation of passing the state required PRAXIS I

examination. Students continue to work on their portfolios over the next two years, and they become major documentation of their professional development as teachers.

Students accepted to teacher candidacy at the end of their second year become immersed in the daily life and issues of public school during an intensive Education semester, a prelude to student teaching. Future teachers learn and teach along with veteran teachers and get involved in many efforts to address the needs of students and schools.

Students graduate from our programs and enter the teaching profession with experience, an authentic view of schools and an understanding that teaching, learning and professional development are lifetime endeavors.

Elementary Concentrations (24 credits) include: art, Canadian studies, disability studies, English, environmental education, French, German, history, honors, human development, international affairs, mathematics, music, Native American studies, natural sciences, peace studies, performing arts, philosophy, psychology, social sciences, Spanish, and women's studies.

Students must meet teacher candidacy requirements prior to the third year:

- 2.5 grade-point average
- field experience requirement and essay
- technology competency
- PRAXIS I examination

Suggested Curriculum for the B.S. in Elementary Education

First Year - First Semester

CHF 201 - Introduction to Child Development	3
ENG 101 - College Composition	3
PSY 100 - General Psychology	3
General Education Requirements	6

First Year - Second Semester

EDB 202 - Schools, Students, and Society	3
MAT 107 - Elementary Descriptive Geometry	3
General Education Requirements	9

Second Year - First Semester

General Education Requirements and Concentration Electives	15

Second Year - Second Semester

EDB 221 - Educational Psychology	3
General Education Requirements and Concentration Electives	12

— Apply for teacher candidacy —

Third Year - First Semester

EDB 204 - The Teaching Process	3
ERL 317 - Children's Literature	3
ERL 318 - Teaching Language Arts in the Elementary School	3
General Education / Electives	6

Third Year - Second Semester

EDG 400 - Field Observation (Activity)	1-6
EMA 314 - Teaching Mathematics in Elementary School	3
ERL 313 - Teaching of Reading in the Elementary School	3
ESC 316 - Teaching Science in the Elementary School (K-8)	3
ESS 315 - Teaching Social Studies in the Elementary School	3
SED 402 - Adapting Instruction for Students with Disabilities	3

Fourth Year - First Semester

EDG 498 - Problems in Education	Ar
STT 490 - Full-Day Student Teaching (Elementary)	1-12

Fourth Year - Second Semester

General Education Requirements and Concentrations Electives	15

Fourth Year - First Semester

EDG 498 - Problems in Education	Ar
STT 490 - Full-Day Student Teaching (Elementary)	1-12

Fourth Year - Second Semester

General Education Requirements and Concentration Electives	15)

Kinesiology and Physical Education

Students in the Kinesiology and Physical Education programs pursue Teacher Certification, Health/Fitness or Athletic Training. All lead to a thorough understanding and appreciation of human movement, development, and to a variety of careers. KPE graduates become teachers, coaches, YMCA directors, fitness specialists, athletic trainers, and wellness program directors, to name a few.

Students in these career tracks use exercise equipment, computer technology to measure and analyze human movement and capacity, athletic training modalities and rehabilitation equipment. They work with people of all ages and abilities, testing, evaluating, and planning adaptive programs to enable each individual to achieve peak performance. Extensive professional experiences are included in both program options.

Teacher Certification

Teacher Certification emphasizes putting theory into practice. Even before they begin student teaching, students are active participants in K-12 physical education programs. In learning effective strategies, students teach individual and small group lessons, videotape their sessions, and receive individual analysis and feedback from faculty and peers.

Health/Fitness

The exercise science-based Health/Fitness option focuses on the physiology, precision and adaptability of human health, wellness, and movement, and the application of this knowledge to help others improve their overall well being and reach their highest possible level of achievement. The required 300-hour internship provides relevant experience, introduces students to valuable contacts and often serves as a springboard to an exciting first job in the public or private sector.

Athletic Training

Athletic Training is designed to provide a thorough understanding of anatomy, physiology, health and other academic subjects necessary for effective prevention, recognition, evaluation and management of injuries and illnesses. Students work directly with UMaine and community Certified Athletic Trainers over four years, completing 800 hours of supervised, hands-on experiences. Upon successful completion of requirements, students are eligible to apply for the National Athletic Trainers' Association Board of Certification examination. Athletic Training is also a gateway to other allied carriers and to graduate study. The Athletic Training Program is seeking accreditation from the Commission on Accreditation of Allied Health Education Programs.

Suggested curriculum for the B.S. in Kinesiology and Physical Education - Teacher Certification

During their second year of study students are admitted to candidacy in the Teacher Preparation Program by successfully submitting a portfolio which includes documentation of one school experience, a personal philosophy statement, verification of technology competence, and a transcript, which indicates a 2.5 grade, point average and completion of the PRAXIS I examination.

First Year - First Semester

BIO 100 - Basic Biology	4
ENG 101 - College Composition	3
KPE 253 - Theories of Conditioning	3
Western Cultural Tradition	3
KPE Skills Courses	2

First Year - Second Semester

BIO 208 - Anatomy and Physiology	4
Cultural Diversity	3
Math/computer science	3
KPE 250 - First Aid and Emergency Care	3
KPE 262 - Methods-Teaching Physical Education	3
KPE Skills Courses	1

Second Year - First Semester

During their second year of study students are admitted to candidacy in the Teacher Preparation Program by successfully submitting a portfolio which includes documentation of two field experiences, a personal philosophy statement, verification of technology competence, and a transcript, which indicates a 2.5 grade, point average and completion of the PRAXIS I examination.

EDB 202 - Schools, Students, and Society	3
KPE 271 - History and Philosophy of Kinesiology and Physical Education	3
KPE 278 - Health Education	2
KPE 344 - Principles of Coaching	3
PSY 100 - General Psychology	3
Population and Environment	3

Second Year - Second Semester

KPE 270 - Motor Development and Learning	3
— Apply for teacher candidacy —	
Electives	2
Concentration	3
KPE Skills	2
KPE Methods of Teaching and Coaching	2
Artistic/Creative Expression	3

Third Year - First Semester

EDB 221 - Educational Psychology	3
Concentration	3
KPE 367 - Mainstreaming in Physical Education-Recreation	3
KPE Skills	3
KPE 376 - Kinesiology	3

Third Year - Second Semester

KPE 310 - Outdoor Leadership	3
KPE 364 - Elementary School Physical Education	3
KPE 378 - Physiology of Exercise	3
KPE Methods of Teaching and Coaching	1
Concentration	6

Fourth Year - First Semester

KPE 350 - Educational Gymnastics, Games and Dance	3
KPE 365 - Curriculum and Instruction in Secondary Physical Education	3
KPE 372 - Tests and Measurements in Physical Education-Recreation	3
KPE Methods of Teaching and Coaching	1
Concentration	3

Fourth Year - Second Semester

STT 498 - Seminar for Interns	1-3
STT 499 - Student Teaching K-12 (Kinesiology and Physical Education)	1-12

Suggested curriculum for the B.S. in Kinesiology and Physical Education - Health/ Fitness

First Year - First Semester

BIO 100 - Basic Biology	4
ENG 101 - College Composition	3
Western Cultural Tradition	3
KPE 236 - Dance Fitness	1
KPE 237 - Swimming Skills	1
KPE 253 - Theories of Conditioning	3

First Year - Second Semester

BIO 208 - Anatomy and Physiology	4
Cultural Diversity	3
Math/computer	3
KPE 250 - First Aid and Emergency Care	3
KPE 262 - Methods-Teaching Physical Education	3

Second Year - First Semester

BMB 207 - Fundamentals of Chemistry	4
or CHY 121 - Introduction to Chemistry	3
EDB 202 - Schools, Students, and Society	3
FSN 101 - Introduction to Food and Nutrition	3
KPE 278 - Health Education	2
PSY 100 - General Psychology	3

Second Year - Second Semester

KPE 270 - Motor Development and Learning	3
KPE 273 - Anatomy and Pathology of Athletic Injuries	3
PHY 105 - Descriptive Physics	4
or PHY 111 - General Physics I	4
Population and the Environment	3
Concentration	3

Third Year - First Semester

EDB 221 - Educational Psychology	3
Social Context and Institutions	3
KPE 367 - Mainstreaming in Physical Education-Recreation	3
KPE 372 - Tests and Measurements in Physical Education-Recreation	3
KPE 376 - Kinesiology	3
Concentration	3

Third Year - Second Semester

KPE 378 - Physiology of Exercise	3
KPE 426 - Exercise Leadership and Class Management	3
Computer Course	3
Concentration	3

Fourth Year - First Semester

KPE 424 - Adult Fitness	3
Electives	6
Concentration	3
Artistic/Creative Expression	3
KPE 425 - Health Promotion and Disease Prevention	3

Fourth Year - Second Semester

KPE 427 - Health Fitness Internship	6
Electives	9
Concentration	3

Suggested curriculum for the BS in Kinesiology and Physical Education (Athletic Training)

First Year - First Semester

BIO 100 - Basic Biology	4
ENG 101 - College Composition	3
KPE 250 - First Aid and Emergency Care	3
KPE 253 - Theories of Conditioning	3
Western Culture Tradition	3

First Year - Second Semester

BIO 208 - Anatomy and Physiology	4
KPE 100 - Athletic Training Observation I	1
KPE 262 - Methods-Teaching Physical Education	3
KPE 273 - Anatomy and Pathology of Athletic Injuries	3
PSY 100 - General Psychology	3
Math Computer	3

Second Year - First Semester

FSN 101 - Introduction to Food and Nutrition	3
KPE 201 - Athletic Training-Clinical Skills I	3
KPE 223 - Lifeguard Training	1
or KPE 237 - Swimming Skills	1
KPE 385 - Assessment and Evaluation of Upper Extremity Athletic Injuries	3
PHY 105 - Descriptive Physics	4
or PHY 111 - General Physics I	4
Writing Intensive	3

Second Year - Second Semester

CHY 121 - Introduction to Chemistry	3
KPE 202 - Athletic Training-Clinical Skills II	3
KPE 270 - Motor Development and Learning	3
KPE 386 - Assessment and Evaluation of Lower Extremity Athletic Injuries	3
KPE 388 - Therapeutic Modalities	4

Third Year - First Semester

KPE 278 - Health Education	2
KPE 300 - Athletic Training Observation II	1
KPE 367 - Mainstreaming in Physical Education-Recreation	3
KPE 376 - Kinesiology	3
KPE 387 - Rehabilitation of Athletic Injuries	4

Third Year - Second Semester

KPE 302 - Athletic Training Clinical Skills IV	3
KPE 303 - Pharmacology in Athletic Training	1
KPE 372 - Tests and Measurements in Physical Education-Recreation	3
KPE 378 - Physiology of Exercise	3

Fourth Year - First Semester

EDB 221 - Educational Psychology	3
KPE 401 - Athletic Training Senior Seminar	1

KPE 424 - Adult Fitness 3
KPE 425 - Health Promotion and Disease Prevention 3
Cultural Diversity 3

Fourth Year - Second Semester
KPE 426 - Exercise Leadership and Class Management 3
KPE 427 - Health Fitness Internship 6
Population and the Environment 3
Artistic and Creative Expression 3

Secondary Education

The undergraduate teacher education programs at the University of Maine are fully accredited by the National Council for Accreditation of Teacher Education. Students preparing to be secondary teachers spend the first two years building solid liberal arts background, technological competencies and subject area concentrations. They are also guided in the examination of public school classrooms and other settings that provide educational and related service to children and youth.

In their second year of study students apply for teacher candidacy by submitting a portfolio that includes a transcript of their academic work to date which reflects a grade point average of at least 2.5, an analysis of one school field experience with children or adolescents, documentation of technological competence, an essay reflecting upon an educational topic and evidence of passing the PRAXIS I examination.

Students continue to work on their portfolios over the next 2 years and they become major documentation of their professional development as initial teachers.

Students accepted to teacher candidacy at the end of their second year become immersed in the daily life and issues of public schools during an intensive Education semester, a prelude to student teaching. Future teachers learn and teach along with veteran teachers and get involved in many efforts to address the needs of students and schools.

Students graduate from our programs and enter the teaching profession with experience, an authentic view of schools and an understanding that teaching, learning and professional development are lifetime endeavors.

Secondary Education concentrations include: English, mathematics, modern languages, science, and social studies.

Suggested curriculum for the B.S. in Secondary Education (English)

First Year - First Semester
CMJ 102 - Fundamentals of Interpersonal Communication 3
ENG 101 - College Composition 3
PSY 100 - General Psychology 3
General Education requirements 6

First Year - Second Semester
EDB 202 - Schools, Students, and Society 3
ENG Electives 6
General Education requirements 6

Second Year - First Semester
CHF 433 - Adolescence 3
or PSY 324 - Psychology of Adolescence 3
General Education Requirements 4
ENG Electives 9

Second Year - Second Semester
EDB 221 - Educational Psychology 3
— Apply for teacher candidacy —
ENG Electives 12

Third Year - First Semester
EDB 204 - The Teaching Process 3
General Education Requirements 6
ENG Electives 12

Third Year - Second Semester
SED 402 - Adapting Instruction for Students with Disabilities 3
ENG Electives 12

Fourth Year - First Semester
EDG 400 - Field Observation (Activity) 1-6
EDT 400 - Computers in Education 3
ENG 472 - English Language and Writing for the Secondary School 3
ERL 418 - Teaching Young Adult Literature 3
ERL 440 - Teaching Reading in the Secondary School 3
ENG Electives 6

Fourth Year - Second Semester
STT 491 - Full-Day Student Teaching (Secondary) 1-12
STT 498 - Seminar for Interns 1-3

Suggested curriculum for the B.S. in Secondary Education (Mathematics)

First Year - First Semester
ENG 101 - College Composition 3
MAT 126 - Calculus I 4
PSY 100 - General Psychology 3
General Education Requirements 6

First Year - Second Semester
EDB 202 - Schools, Students, and Society 3
MAT 127 - Calculus II 4
PSY 324 - Psychology of Adolescence 3
or CHF 433 Adolescence 3
General Education Requirements. 6

Second Year - First Semester
MAT 228 - Calculus III 4
MAT 261 - Introduction to Abstract Mathematics 3
General Education Requirements 6
MAT elective 3

Second Year - Second Semester
EDB 221 - Educational Psychology 3
MAT 262 - Linear Algebra 3
MAT 434 - Introduction to Statistics 4
— Apply for teacher candidacy —
General Education Requirements 4

Third Year - First Semester
EDB 204 - The Teaching Process 3
General Education Requirements 6
MAT Electives 6

Third Year - Second Semester
EDG 400 - Field Observation (Activity) 1-6
MAT 305 - Mathematics for Secondary School Teachers 3
MAT Elective 3
SED 402 - Adapting Instruction for Students with Disabilities 3
Elective 3

Fourth Year - First Semester
MAT 463 - Introduction to Abstract Algebra I 3
MAT Electives 6
Electives 6

Fourth Year - Second Semester
STT 491 - Full-Day Student Teaching (Secondary) 1-12
STT 498 - Seminar for Interns 1-3

Suggested curriculum for the B.S. in Secondary Education (Modern Language)

First Year - First Semester
ENG 101 - College Composition 3
PSY 100 - General Psychology 3
Language Elective 3
General Education Requirements 6

First Year - Second Semester
EDB 202 - Schools, Students, and Society 3
PSY 324 - Psychology of Adolescence 3
General Education Requirements 6
or CHF 433 Adolescence 3
Language Elective 3

Second Year - First Semester
Language Electives 6
General Education Requirements 7
Elective 3

Second Year - Second Semester
EDB 221 - Educational Psychology 3
General Education Requirement 3
Language Electives 9
— Apply for teacher candidacy —

Third Year - First Semester
Language Electives 12
General Education Requirement 3

Third Year - Second Semester
EDB 204 - The Teaching Process 3
General Education Requirement 3
Language Electives 9

Fourth Year - First Semester
EDG 400 - Field Observation (Activity) 1-6
MLC 466 - The Teaching of Modern Languages 3
SED 402 - Adapting Instruction for Students with Disabilities 3
Electives 6

Fourth Year - Second Semester
STT 491 - Full-Day Student Teaching (Secondary) 1-12
STT 498 - Seminar for Interns 1-3

Suggested curriculum for the B.S. in Secondary Education (Science) with a specialization in Physical Science (Chemistry)

First Year - First Semester
CHY 121 - Introduction to Chemistry 3
CHY 123 - Introduction to Chemistry Laboratory 1
ENG 101 - College Composition 3
MAT 126 - Calculus I 4
PSY 100 - General Psychology 3
General Education Requirement 3

First Year - Second Semester
CHY 122 - The Molecular Basis of Chemical Change 3
CHY 124 - The Molecular Basis of Chemical Change Laboratory 1
EDB 202 - Schools, Students, and Society 3
MAT 127 - Calculus II 4
PSY 324 - Psychology of Adolescence 3
or CHF 433 Adolescence 3
General Education Requirement 3

Second Year - First Semester
MAT 232 - Principles of Statistical Inference 3
PHY 111 - General Physics I 4
or PHY 121 - Physics for Engineers and Physical Scientists I 4
Science Electives 6
General Education Requirement 3

Second Year - Second Semester
CHY 242 - Principles of Quantitative Analysis and Solution Equilibria 5
EDB 221 - Educational Psychology 3
PHY 112 - General Physics II 4
or PHY 122 - Physics for Engineers and Physical Scientists II 4
— Apply for teacher candidacy —
General Education Requirement 3

Third Year - First Semester
CHY 251 - Organic Chemistry I 3
CHY 371 - Physical Chemistry I 3
EDB 204 - The Teaching Process 3
General Education Requirements 3
Science Electives 3

Third Year - Second Semester
CHY 252 - Organic Chemistry II 3
CHY 372 - Physical Chemistry II 3
EDG 400 - Field Observation (Activity) 1-6
ESC 452 - Teaching Science in the Secondary School 3
SED 402 - Adapting Instruction for Students with Disabilities 3

Fourth Year - First Semester
CHY 443 - Instrumental Analysis 3
EDT 400 - Computers in Education 3
General Education Requirements 3
Science Electives 6

Fourth Year - Second Semester
STT 491 - Full-Day Student Teaching (Secondary) 1-12
STT 498 - Seminar for Interns 3

Suggested curriculum for the B.S. in Secondary Education (Science) with a specialization in Physical Science (Physics)

First Year - First Semester
ENG 101 - College Composition 3
MAT 126 - Calculus I 4
PHY 111 - General Physics I 4
PHY 121 - Physics for Engineers and Physical Scientists I 4
PSY 100 - General Psychology 3
General Education Requirement 3

First Year - Second Semester
EDB 202 - Schools, Students, and Society 3
MAT 127 - Calculus II 4
PHY 112 - General Physics II 4
or PHY 122 - Physics for Engineers and Physical Scientists II 4
PSY 324 - Psychology of Adolescence 3
General Education Requirement 3
or CHF 433 Adolescence 3

Second Year - First Semester
CHY 121 - Introduction to Chemistry 3
CHY 123 - Introduction to Chemistry Laboratory 1
MAT 228 - Calculus III 4
MAT 232 - Principles of Statistical Inference 3
Elective. 3
General Education Requirement 3

Second Year - Second Semester
CHY 122 - The Molecular Basis of Chemical Change 3
CHY 124 - The Molecular Basis of Chemical Change Laboratory 1
EDB 221 - Educational Psychology 3
MAT 258 - Introduction to Differential Equations with Linear Algebra 4
or MAT 259 - Differential Equations 3
— Apply for teacher candidacy —
Science Elective 3
General Education Requirement 3

Third Year - First Semester
EDB 204 - The Teaching Process 3
PHY 236 - Introductory Quantum Physics 3
General Education Requirement 3
Science Elective 6

Third Year - Second Semester
EDG 400 - Field Observation (Activity) 1-6
ESC 452 - Teaching Science in the Secondary School 3
PHY 238 - Mechanics 3
SED 402 - Adapting Instruction for Students with Disabilities 3
General Education Requirement 3

Fourth Year - First Semester
EDT 400 - Computers in Education 3
General Education Requirement 3
Science Electives. 6
Elective 3

Fourth Year - Second Semester
STT 491 - Full-Day Student Teaching (Secondary) 1-12
STT 498 - Seminar for Interns 1-3

Suggested curriculum for BS in Secondary Education (Science) with a specialiation in Physical Science (Earth Science)
A curriculum for Earth Science teachers is available. Please see science faculty advisor.

Suggested curriculum for the B.S. in Secondary Education (Social Studies)

First Year - First Semester
ENG 101 - College Composition 3
PSY 100 - General Psychology 3
Social Science Electives 6
General Education Requirement 3

First Year - Second Semester
EDB 202 - Schools, Students, and Society 3
PSY 324 - Psychology of Adolescence 3
General Education Requirement 4
Social Science Electives 6

Second Year - First Semester
Social Science Electives 9
General Education Requirements 6

Second Year - Second Semester
EDB 221 - Educational Psychology 3
— Apply for teacher candidacy —
Social Science Electives 9
General Education Requirement 4

Third Year - First Semester
Social Science Electives 9
General Education Requirement 3
Elective 3

Third Year - Second Semester
EDB 204 - The Teaching Process 3
Electives 9
General Education Requirement 3

Fourth Year - First Semester

EDG 400 - Field Observation (Activity)	1-6
ESS 441 - Teaching Social Studies in the Secondary School	3
SED 402 - Adapting Instruction for Students with Disabilities	3
Social Science Electives	6

Fourth Year - Second Semester

EDG 498 - Problems in Education	Ar
STT 491 - Full-Day Student Teaching (Secondary)	1-12

College of Education and Human Development Minors

The College of Education and Human Development offers an 18 credit minor in Elementary and Secondary Education for undergraduate students in other colleges of the University of Maine who wish to explore the field of education. Students must apply for the minor, optimally during the second semester of the second year of study. Applications are available at the information desk in the College. Application requirements include the following elements:

- A cumulative GPA of 2.5 or better,
- Successful completion of EDB 202 - School, Students and Society, EDB 221 - Educational Psychology, and a Child or Adolescent Development course,
- A grade of C or better in all education courses,
- A written Field Experience Report based upon your volunteer work in local schools, community service agencies, after School enrichment programs and/or summer camp programs with K-12 students, and
- An essay addressing your reasons for pursuing the minor.

Students who wish to purse teacher certification in Maine must be enrolled in the College of Education and Human Development or by completing a double major in Education and another College.

An alternative route to a teaching career for Liberal Arts majors is the Master of Arts in Teaching Program that is sponsored by the College. This fifth year program is competitive and application should be made by February 1 of the senior year. Applications are available at the College Information desk.

Child Development and Family Relations: (18 credits)

The minor in Child Development/Family Relations consists of CHF 200, CHF 201, and 12 additional credits of CHF courses. Students must earn a minimum grade of C (2.0) in CHF 200 and CHF 201, and the overall GPA for the 18 CHF credits must average a C (2.0). No more than three credits of CHF 409 Special Topics in Child Development/Family Relations and no more than three credits of CHF 496 Field Experience in Child Development/Family Life may be used toward the minor.

CHF 200 - Family Interaction	3
CHF 201 - Introduction to Child Development	3
Additional CHF courses	12

Elementary Education: (18 credits)

Courses to be taken prior to application for the minor:

CHF 201 - Introduction to Child Development	3
EDB 202 - Schools, Students, and Society	3
EDB 221 - Educational Psychology	3

Courses to complete the minor:

EDB 204 - The Teaching Process	3
EDT 400 - Computers in Education	3
SED 402 - Adapting Instruction for Students with Disabilities	3

Exercise Science (Kinesiology and Physical Education): (18 credits)

The minor in Exercise Science has close ties to other areas including, but not limited to nutrition, biochemistry and animal physiology. This minor offers students in these areas an opportunity to broaden their knowledge of their own fields of study. Academic prerequisites include BIO 100 (Basic Biology) and BIO 208 (Anatomy and Physiology). Students must maintain a 2.5 in the minor. Courses constituting the minor include the following:

KPE 270 - Motor Development and Learning	3
KPE 376 - Kinesiology	3
KPE 378 - Physiology of Exercise	3
KPE 424 - Adult Fitness	3
KPE 425 - Health Promotion and Disease Prevention	3
KPE 426 - Exercise Leadership and Class Management	3

Secondary Education: (18 credits)

Courses to be taken prior to application for the minor:

EDB 202 - Schools, Students, and Society	3
EDB 221 - Educational Psychology	3
PSY 324 - Psychology of Adolescence	3
or CHF 433 - Adolescence.	3

Courses to complete the minor:

EDB 204 - The Teaching Process	3
EDB 221 - Educational Psychology	3
EDC 333 - Curriculum Development and Evaluation	1.5 - 3
SED 402 - Adapting Instruction for Students with Disabilities	3

College of Engineering

The mission of the University of Maine College of Engineering is to be the state's engineering and engineering technology center of learning, discovery, and service. The goals of the College are to provide quality undergraduate and graduate engineering instruction; to conduct quality research directed toward the discovery and advancement of knowledge in engineering and engineering science; and to provide applied research, development and education for industry and individuals.

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 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; and the dynamic nature of engineering developments and practice which require lifelong maintenance and updating of professional competence. The specific educational objectives are to:

- Provide students with a sound knowledge of the fundamental principles of engineering and engineering science.
- Develop in graduates critical thinking and problem solving skills that can be applied to a wide range of problems-both technical and non-technical.
- Provide the skills necessary for the practice of engineering or engineering technology.
- Provide a well-balanced educational experience that will help the student develop communication skills, an appreciation of social values and an understanding of the social implications of technology.
- Ensure that programs in the College of Engineering remain technically current and responsive to the changing needs of society.

In addition, the College has research and public service objectives in the tradition of the Land Grant University Mission. These objectives are to:

- Apply engineering principles to solve challenges facing Maine, the nation and world.
- Stimulate and maintain the involvement of the faculty in new developments in their fields.
- Provide opportunities for undergraduate and graduate students to participate in state of the art research.
- Provide assistance to industry, government agencies and other groups in the solution of engineering related problems.
- Provide assistance in the implementation of research findings and advanced engineering methods.

ACADEMIC PROGRAMS:

Bachelor of Science in:

Biological Engineering
Chemical Engineering
Civil Engineering
Computer Engineering
Construction Management Technology
Electrical Engineering
Electrical Engineering Technology
Engineering Physics
Information Systems Engineering
Mechanical Engineering
Mechanical Engineering Technology
Pulp and Paper Technology
Surveying Engineering Technology

Minors:

Biomedical Engineering
Construction Management Technology
Digital Systems
Electronic Instrumentation
Engineering Entrepreneurial
Environmental Quality
Fluid Mechanics
Naval Science
Process Engineering
Pulp and Paper Technology
Solid Mechanics
Structures
Thermodynamics
Water Resources

General Education Requirements:

All engineering students must meet university-wide general education requirements. Notes specific to engineering follow:

Science: Any program in the college will easily exceed this standard with the required chemistry and physics courses.

Human Values and Social Context: Except for civil and environmental engineering majors, it is recommended that engineering and technology students carefully select these electives so that an ethics elective is included within the 18 credits required.

Mathematics: Any program in the college will easily exceed this standard.

Writing Competency: Writing intensive courses within the major are BLE 492, CET 456, CHE 361 and 363, CIE 231 and 366, ECE 403, EET 100, MEE 341, MET 234, PHY 441 and 442, and SIE 451. For most engineering and technology majors, ENG 317 is the second required writing intensive course (only chemical engineering and engineering physics do not require ENG 317).

Ethics: The only approved engineering technology course is TSO 360. TSO 360 is only required of civil and environmental engineering majors. Therefore, other majors must select a Human Values and Social Context (HVSC) elective that also qualifies as an ethics elective or take TSO 360 as an extra course (1 credit). TSO 360 is not certified as an HVSC elective. This is the case for many ethics electives so that students must carefully select their ethics elective, if it is to count toward the 18 required credits of HVSC electives.

Senior Capstone Experience: Students are required to complete a capstone experience within the major. For engineering and technology majors capstone courses are BLE 492, CET 458, CHE 479, CIE 411, ECE 403, EET 451 and 452 combined, MEE487 and 488 combined, MET 462 and 463 combined, PHY 481 and 488 combined, and SIE 460.

College of Engineering Notes:

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 Project:

The Technology and Society project is intended to develop ways to enhance the human values and social context component of undergraduate engineering programs, to work with other colleges in developing the study of technology as a human activity and to infuse the undergraduate curriculum of the university with this study. The program offers courses dealing with technological development and with topics involving the interfaces of technology and society. Teams of faculty members in which each member can provide a different perspective on the subject matter usually teach these courses.

Courses covering the Technology and Society area are:

HTY 420 Science and Society Since 1800
HTY 486 Sea and Civilization
HTY 491 Technology and Society Until 1800
HTY 492 Technology and Society Since 1800
TSO 288 Issues in Environmental Pollution
TSO 360 Introduction to Engineering Ethics
TSO 398 Special Topics in Technology and Society

Transfer Credit:

Evaluation of courses for degree credit and possible equivalency rests with the Dean

of the College of Engineering. Credits from military service will be evaluated on a case by case basis. Normally credits transferred 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 BS Engineering program.

Pass/Fail:

Students enrolled in the College of Engineering may not take a course (except co-op) on a Pass/Fail basis, if the course is to be used to fulfill degree requirements.

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 merit based scholarship program available to qualified students throughout the College of Engineering, School of Engineering Technology and the forest management program in the College of Natural Sciences, Forestry and Agriculture.

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Biological Engineering

The mission of the Biological Engineering program reflects the mission of the land grant system, specifically to provide teaching, research and public service in the discipline of biological systems engineering. The goal of the Bachelor of Science program is to provide high quality undergraduate engineering instruction related to biological systems. The curriculum objectives are to:

- Provide students with a solid foundation in biological engineering through the understanding and application of mathematics, science, and engineering principles.
- Prepare students for a broad range of career opportunities through the use of problem solving and critical thinking methods.
- Help students develop the ability to function effectively in the workplace through teamwork and effective communication of technical/professional information.
- Help students become aware of their moral, ethical, legal, and professional obligations to hold paramount the safety, health, and welfare of the public.
- Help students develop an appreciation for the necessity for lifelong learning.

Biological engineers primarily design processing systems that render biological raw materials into value-added products. Many biological engineers work on problems of scale-up related to biological processing and therefore need to be conscious of system costs, efficiencies, and environmental impacts. This curriculum provides a unique background so that students may solve engineering problems and produce engineering designs in fields associated with biomedical, bioprocessing, biotechnology as well as other biologically related fields. The program follows the "process engineering" approach. During the first five terms the Biological Engineering (BLE) and Chemical Engineering (CHE) programs are essentially the same except that BIO 100 is required for BLE. The required courses cover both the scientific foundations of the subject and the relevant engineering sciences such as thermodynamics, kinetics, fluid mechanics and unit operations. The CHE and BLE programs diverge for the last three terms during which the courses are more discipline specific. A major advantage of this arrangement is that students who are interested in the process engineering approach can transfer freely between BLE and CHE until the second term of the junior year. Additional information about the program is available on the Web at http://www.engineering.umaine.edu/

Program Description

The basic curriculum, combined with electives in engineering, the humanities and social sciences, and in the life sciences, and culminating with a two-semester engineering design experience, provides a broad base of knowledge for engineering practice in today's society. Students may, in consultation with their academic advisor, focus their technical elective courses in bioprocessing, biomechanics or biomaterials. Degrees are awarded upon satisfactory completion of 130 credits at an accumulative grade point average of not less than 2.0 in Chemical and Biological Engineering courses, including technical electives credits. The program in Biological Engineering is fully accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET). Biological engineering students are eligible to enroll in the minor of Biomedical Engineering administered by the College of Engineering at the University of Maine.

The undergraduate program prepares students for graduate work as well as immediate employment. The degree of Master of Science (Biological Engineering) is offered with or without a thesis in several option areas. Several assistantships are available. Incumbents devote half time to research on approved projects of the primary research emphasis areas at the University of Maine with relevance to Maine and the world. The program is described in the University of Maine Graduate School Catalog and on the Web at: http://www.umaine.edu/graduate/

Co-operative "Work Experience" Program Option

Students who are engaged in engineering related summer jobs under the direction of the program's cooperative (co-op) coordinator can earn three credits toward their technical elective credits through the cooperative education program, following an approved work experience sequence in the field of study.

Employment Opportunities

Employment opportunities for biological engineers are as diverse as the biologically-based industries themselves. Graduates in Biological Engineering find employment as design or sales engineers in industries such as biomedical, bioprocessing, food, pharmaceutical; in federal government entities such as EPA, NIH, USDA, or similar state agencies; in biological waste utilization industries; in government, industry, or state experimental facilities as research engineers; or in colleges and universities as teachers or instructors. Expanding engineering opportunities are available in the evolving fields of biomedical and biotechnology and the engineering of their related systems. Some graduates work as consulting engineers and a number of opportunities for overseas employment are available. With the expanding world population and a rising demand for higher standards of living, Biological Engineers will continue to be in great demand.

Scholarships

The program offers scholarships for outstanding students majoring in biological engineering. In addition, students can apply for college scholarships through the College of Engineering.

Suggested curriculum for the B.S. in Biological Engineering

The recommended sequence of the four-year curriculum is outlined below. Copies can also be obtained in the College of Engineering office with detailed explanation of the requirements. This program can be adapted to a student's special scheduling needs in consultation with an academic advisor.

First Year - First Semester

CHB 111 - Introduction to Chemical and Biological Engineering I	2
CHY 121 - Introduction to Chemistry	3
CHY 123 - Introduction to Chemistry Laboratory	1
ENG 101 - College Composition	3
MAT 126 - Calculus I	4
PHY 121 - Physics for Engineers and Physical Scientists I	4

First Year - Second Semester

CHB 112 - Introduction to Chemical and Biological Engineering II	2
CHY 122 - The Molecular Basis of Chemical Change	3
CHY 124 - The Molecular Basis of Chemical Change Laboratory	1
MAT 127 - Calculus II	4
PHY 122 - Physics for Engineers and Physical Scientists II	4
General Education Requirement 1	3

Second Year - First Semester

BIO 100 - Basic Biology	4
CHB 200 - Fundamentals of Process Engineering	4
CHY 251 - Organic Chemistry I	3
CHY 253 - Organic Chemistry Laboratory I	2
MAT 228 - Calculus III	4

Second Year - Second Semester

CHB 350 - Statistical Process Control and Analysis	3
CHE 385 - Chemical Engineering Thermodynamics I	3
ECE 210 - Electrical Networks I	3
MAT 258 - Introduction to Differential Equations with Linear Algebra	4
General Education Requirement	2-3
General Education Requirement Elective	3

Third Year - First Semester

BMB 300 - General Microbiology	3
BMB 305 - General Microbiology Laboratory	2
CHE 352 - Process Control	3
CHE 360 - Elements of Chemical Engineering I	4
MEE 252 - Statics and Strength of Materials	3
General Education Requirement 3	3

Third Year - Second Semester

BMB 322 - Biochemistry	3
BMB 323 - Introductory Biochemistry Laboratory	1
CHE 361 - Chemical Engineering Laboratory I	3
CHE 362 - Elements of Chemical Engineering II	4
CHE 368 - Kinetics and Reactor Design	3
Technical Elective 1	3

Fourth Year - First Semester

BLE 492 - Design Project Ar	
CHB 460 - Biochemical Engineering	3
CHB 493 - Chemical and Biological Engineering Seminar	0-1
CHE 363 - Chemical Engineering Laboratory II	3
CHE 477 - Elements of Chemical Process Design	3
General Education Requirement 4	3

Fourth Year - Second Semester

BLE 462 - Power Transmission and Control	3
BLE 492 - Design Project	Ar
General Education Requirement 6	3
General Education Requirement 5	3
Technical Elective II	3

Special Requirements

Fundamentals of Engineering Examination: Students are required to take the FE examination in the last year of study.

Technical Electives

Technical Electives can be selected from a wide variety of courses in engineering and the sciences with guidance from the student's academic advisor.

Chemical Engineering

Chemical Engineers are concerned primarily with the design, operation and management of processing systems to alter and upgrade raw materials into products that are more useful to society (and therefore more valuable). In the design and operation of such facilities two competing concerns are generally paramount: the need to minimize both costs and environmental impact. Since chemical engineers are employed in many different industries, the basic training is general and not industry-specific.

The mission of the Chemical Engineering program is to provide education, research and public service in chemical engineering. The goals of the program are to provide high quality educational programs at both the undergraduate and postgraduate levels; to conduct research projects that further fundamental understanding and address practically relevant problems; to act as a center of technical expertise and service to industry and to government agencies that may require assistance in the general area of chemical engineering; and to sustain our established strength as a center of excellence for teaching, research and service in areas related to the pulp and paper industry. More information about chemical engineering can be found on our web site http://www.umecheme.maine.edu/che

Program Description

The BS program in chemical engineering is broadly based and built on a thorough grounding in mathematics, physics and chemistry followed by the study of thermodynamics, kinetics, fluid mechanics and unit operations. Economics, process design and more specialized technical electives are studied during the final year. With the exception of BIO 100 (which is required for BLE students) the chemical engineering (CHE) and biological engineering (BLE) programs are common for the first five terms. This means that students who are undecided between CHE and BLE can defer their decision until the second term of the junior year.

Key objectives of the program are to develop analytical and problem solving skills, communication skills and a level of general education that will allow the graduate to function effectively as a chemical engineer in the twenty-first century. The specific educational objectives of the program are:

- To provide students with a sound foundation in the principles of chemical engineering and an understanding of the scientific principles on which chemical engineering is based.
- To assist students to develop their problem solving skills so that they learn how to apply chemical engineering principles to the solution of practical problems.
- To assist students in developing their communication skills so that they learn how to present complex ideas in a clear, logical and concise way, both orally and in writing.
- To provide students with practical laboratory training and with the opportunity to participate in the CHE cooperative education program and thus to gain experience and understanding of chemical engineering practice.
- To provide students with the broad educational background needed to understand how our society functions and to appreciate their legal and ethical responsibilities.
- To assist students to develop their teamwork skills.
- To introduce students to the application of modern computer software, including advanced process simulation programs, to the solution of chemical engineering problems.

The program, which requires successful completion of 130 credits of course work with a minimum cumulative grade point average of 2.0 in the major, can be completed in four academic years of full time study. It is accredited by the Accreditation Board for Engineering and Technology (ABET).

Cooperative "Work-Experience" Program Option in Chemical Engineering

Students with satisfactory academic standing at the end of their fourth semester may elect to participate in the "Co-Op" program. This fifteen month program, which is undertaken during the junior year, involves a combination of two fourteen week periods of supervised (paid) professional experience as a junior engineer separated by a regular academic term and either followed or preceded by a summer term at Orono. Participating students must register for six credits but, in general, these cannot be substituted for the courses required for the BS degree. Student who plan to take their co-op work experience within the Pulp and Paper sector are strongly advised to take the Introductory course PPA 264 prior to their first co-op term. For such students this course will be considered as a technical elective.

Employment Opportunities

Chemical Engineering graduates find employment in all the major process industries: petroleum refining, petrochemicals, commodity chemicals, pharmaceuticals, extractive metallurgy, production of semiconductors and the pulp and paper industry. Job functions cover a wide range of activities including research and development, process design, control, operation and management of production facilities and technical sales.

Scholarships

Many of the Chemical Engineering undergraduates enjoy some degree of scholarship support. The following (unrestricted) awards are offered on a competitive basis:

Eileen M. Burns Scholarship
Charles A. Brautlecht Scholarship
Omar F. and Lenora L. Tarr Memorial Scholarship
S.T. Han Memorial Scholarship
Louis Calder Foundation Scholarship
Thomas and John Mangan Scholarship

In addition the Pulp and Paper Foundation offers merit based scholarships to students who intend to seek careers in the pulp and paper or related industries. Further information can be obtained from Peter Duncan, Executive Director, UM Pulp and Paper Foundation, Jenness Hall, Orono 04469-5737. Phone (207) 581-2298. FAX (207) 581-2000, email: woodcock@maine.edu

Suggested curriculum for the B.S. in Chemical Engineering

The recommended sequence of the four-year curriculum is shown below. Copies can also be obtained in the Chemical Engineering office with detailed explanations of the requirements. This program can be adapted to a student's special scheduling needs in consultation with an academic advisor.

First Year - First Semester	
CHB 111 - Introduction to Chemical and Biological Engineering I	2
CHY 121 - Introduction to Chemistry	3
ENG 101 - College Composition	3
MAT 126 - Calculus I	4
PHY 121 - Physics for Engineers and Physical Scientists I	4
First Year - Second Semester	
CHB 112 - Introduction to Chemical and Biological Engineering II	2
CHY 122 - The Molecular Basis of Chemical Change	3
CHY 124 - The Molecular Basis of Chemical Change Laboratory	1
MAT 127 - Calculus II	4
PHY 122 - Physics for Engineers and Physical Scientists II	4
Human Values and Social Context Elective	3

Second Year - First Semester

CHB 200 - Fundamentals of Process Engineering	4
CHY 251 - Organic Chemistry I	3
CHY 253 - Organic Chemistry Laboratory I	2
MAT 228 - Calculus III	4
Human Values and Social Context Elective	3

Second Year - Second Semester

CHB 350 - Statistical Process Control and Analysis	3
CHE 385 - Chemical Engineering Thermodynamics I	3
CHY 252 - Organic Chemistry II	3
ECE 210 - Electrical Networks I	3
MAT 258 - Introduction to Differential Equations with Linear Algebra	4
PPA 264 - Introduction to the Pulp and Paper Industry	3
Human Values and Social Context Elective	3
or ECE 210 - Electrical Networks I [1]	3

Third Year - First Semester

CHE 352 - Process Control	3
CHE 360 - Elements of Chemical Engineering I	4
CHE 386 - Chemical Engineering Thermodynamics II	3
MEE 252 - Statics and Strength of Materials	3
Approved Chemistry Elective	3

Third Year - Second Semester

CHE 361 - Chemical Engineering Laboratory I	3
CHE 362 - Elements of Chemical Engineering II	4
CHE 368 - Kinetics and Reactor Design	3
CHY 372 - Physical Chemistry II	3
Approved Technical Elective I	3

Fourth Year - First Semester

CHB 493 - Chemical and Biological Engineering Seminar	0-1
CHE 363 - Chemical Engineering Laboratory II	3
CHE 477 - Elements of Chemical Process Design	3
CHE 478 - Analysis, Simulation and Synthesis of Chemical Processes	3
Human Values and Social Context Elective	3
Approved Technical Elective II	3

Fourth Year - Second Semester

CHB 493 - Chemical and Biological Engineering Seminar	0-1
CHE 479 - Process Design Projects	4
Human Values and Social Context Electives	6
Approved Technical Elective III	3

[1]ECE 210 is a required course. Students who take PPA 264 in place of ECE 210 in the fourth term of the program should arrange to pick up ECE 210 in place of one of the technical electives later in the program.

Special Requirements:
Approved Technical Electives (12 credits)

The technical elective program requires 3 credits of appropriate 300, 400 or 500 level courses with a major emphasis on chemistry plus 9 credits of unrestricted CHE electives (400 or 500 level). Suitable chemistry electives include CHE 420, CHE 430, CHE 520, CIE 533, or any other 300 or 400 level CHY courses. With permission of the Chair courses at the 300 level in other areas of science or engineering may be allowed in place of one or more of the CHE electives.

Ethics

The course sequence CHE 111, CHE 477, CHE 479 and CHE 493 satisfies the University of Maine general education requirement for ethics. Transfer students who do not complete this sequence of courses should make sure that they satisfy the ethics requirement through their choice of non-technical electives or by taking the course TSO 360.

Fundamentals of Engineering Examination

Students are recommended (but not required) to take the FE examination.

Civil Engineering

Civil and environmental engineers are primarily responsible for planning, designing, and constructing facilities to serve society, all providing for the health and safety of its citizens. These facilities include 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 of these areas and may further specialize in a particular function such as design or management.

The objectives of the Civil and Environmental Engineering program are:

- Prepare individuals to become professional practitioners of civil engineering;
- Develop fundamental science, mathematics, computer, and engineering knowledge necessary for civil engineering;
- Provide broad education to understand the context of civil engineering;
- Prepare students to communicate facts and ideas;
- Prepare and encourage students to continue learning beyond the undergraduate years; and
- Promote and advance the profession of civil engineering.

More information about the department and the program can be found on our web site www.umeciv.maine.edu/ce .

Program Description

The multifaceted nature of this society-serving profession dictates that civil engineers have proficiency in four areas: structural, geotechnical, environmental, and transportation engineering. To achieve that objective, students need to be proficient in mathematics through differential equations; probability and statistics; calculus-based physics; and general chemistry. The ability to conduct laboratory experiments and to critically analyze and interpret data in more than one of the four above-mentioned major areas is emphasized throughout the program. Design is integrated throughout the professional component of the curriculum by means of design experiences and by functioning on multidisciplinary teams.

Since civil and environmental engineering is a "societal" profession, our engineers may also be faced with economic, ethical, political, social, and legal issues. Moreover, civil engineers must be able to communicate effectively both orally and in writing. Therefore, societal issues and communication skills are emphasized in our civil and environmental engineering courses. Moreover, the curriculum provides for "Human Values and Social Context" courses, including ethics, writing and public speaking. A senior "capstone" course, taken in the spring semester of the senior year, provides students an opportunity to "put it all together" around an active civil engineering project, while gaining understanding of professional practice issues.

Degrees are awarded upon satisfactory completion of 127 credits at an accumulative grade point average of not less than 2.0 in Civil and Environmental Engineering courses. The program in Civil and Environmental Engineering is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET).

Cooperative "Work Experience" Program Option

Students who are engaged in engineering related summer jobs under the direction of the department's co-op coordinator can earn three credits of technical elective through the cooperative education program of the department.

Employment Opportunities

Civil and environmental engineers work in consulting firms, construction, manufacturing industries such as paper and chemical, in the engineering offices of cities and towns, for government agencies and in private practice.

Scholarships

The department offers PaCEsetter Scholarships for outstanding first-year students majoring in civil and environmental engineering. In addition, students can apply for college and departmental scholarships through the College of Engineering and departmental scholarships through the department.

Suggested curriculum for the B.S. in Civil Engineering

The recommended sequence of the four-year curriculum is outlined below. Copies can also be obtained in the Civil and Environmental Engineering office with detailed explanation of the requirements. This program can be adapted to a student's special scheduling needs in consultation with an academic advisor.

First Year - First Semester

CHY 121 - Introduction to Chemistry	3
CHY 123 - Introduction to Chemistry Laboratory	1
CIE 100 - Introduction to Civil and Environmental Engineering	1
CIE 110 - Materials	3
CIE 111 - Materials Laboratory	1
ENG 101 - College Composition	3
MAT 126 - Calculus I	4

First Year - Second Semester

CIE 101 - Civil Engineering Graphics	3
CIE 115 - Computers in Civil Engineering	3
MAT 127 - Calculus II	4
Human Values and Social Context Elective	3
Basic Science Elective	4

Second Year - First Semester

CIE 231 - Fundamentals of Environmental Engineering	3
MAT 228 - Calculus III	4
MEE 150 - Applied Mechanics: Statics	3
PHY 121 - Physics for Engineers and Physical Scientists I	4
Human Values and Social Context Elective	3

Second Year - Second Semester

CIE 225 - Transportation Engineering	3
MAT 258 - Introduction to Differential Equations with Linear Algebra	4
MEE 251 - Strength of Materials	3
PHY 122 - Physics for Engineers and Physical Scientists II	4
Human Values and Social Context Elective	3

Third Year - First Semester

CET 101 - Plane Surveying	3
CIE 340 - Introduction to Structural Analysis	4
CIE 350 - Hydraulics	3
CIE 351 - Hydraulics Laboratory	1
CMJ 103 - Fundamentals of Public Communication	3

Third Year - Second Semester

CIE 365 - Soil Mechanics	3
CIE 366 - Soil Mechanics Laboratory	1
ENG 317 - Business and Technical Writing	3
MAT 332 - Statistics for Engineers	3
Human Values and Social Context Elective	3
Civil Engineering Elective	3

Fourth Year - First Semester

CIE 412 - Engineering Decisions	2
CIE 413 - Project Management	2
Engineering Science Elective	3
Civil Engineering or Technical Elective	4
Civil Engineering Electives	6

Fourth Year - Second Semester

CIE 411 - Engineering Project Design	3
Civil Engineering Elective	3
TSO 360 - Engineering Ethics	1
Civil Engineering or Technical Elective	3
Human Values and Social Context Elective	3

Special Requirements:

Practicing civil and environmental engineers have to become registered as a professional engineer (PE). The first step toward that goal is achieved by taking the Fundamentals of Engineering Examination usually administered in the spring semester of the senior year. Although not required for the degree, it is a professional necessity.

Computer Engineering

The Department of Electrical and Computer Engineering offers undergraduate and graduate degrees in both Electrical Engineering and Computer Engineering. Additional information about the Department and programs are available on the Web at www.eece.maine.edu.

The mission of the Computer Engineering program is to provide quality education, research and public service in the discipline of computer engineering. Toward accomplishing this mission the Department has set the following objectives for its Computer Engineering curriculum:

- To assist and encourage students in developing a solid foundation in computer engineering and some of its sub-disciplines.
- To guide students in their preparation for a broad range of career opportunities.
- To help students develop the ability to function in the workplace through teamwork and effective communication.
- To help students become aware of their moral, ethical, legal, and professional obligations to hold paramount the safety, health, and welfare of the public.
- To help students develop an appreciation for the necessity of lifelong learning.

Program Description

The Computer Engineering curriculum provides students with the technical skills as well as the basic mathematical and scientific background required to advance current technology and to contribute to future developments in the computer engineering profession. The curriculum strives to instill critical written and oral communication skills in addition to providing a diverse background in the humanities and social sciences. Our graduates acquire a sense of professionalism as they become aware of an engineer's responsibility to help solve societal problems. They also develop the ability to contribute to team solutions and an appreciation for the importance of life-long learning.

The curriculum adopts a practical hands-on approach that combines classroom theory and laboratory experience to produce an engineer who can carry a technical project from inception through to the implementation of a successful solution. The process begins in the first year of the program when students learn to prototype digital circuits and program micro-controller boards. It continues through the senior year when they complete their capstone design projects. In this latter case, students, usually working in two-person teams over three semesters, propose, specify, create, present, and demonstrate a solution to a technical problem of their choosing.

A double major leading to a BS in both Electrical and Computer Engineering is a popular option for many students. By a judicious choice of electives and early planning, this option can be achieved in an extra semester or by taking summer courses. Note that the first year curriculum is the same for electrical and computer engineers and that the sophomore year is very similar for the two majors. Students interested in the possibility of a double major should consult with their advisors early in their programs.

To obtain a BS 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 2.0 or better in all ECE courses as well as a GPA of 2.0 or better in all COS courses. Deviation from the above policies requires approval of the Electrical and Computer Engineering faculty. The undergraduate degree is accredited by the Engineering Association Commission of the Accreditation Board for Engineering and Technology (ABET).

Our undergraduate program prepares students for graduate work as well as industry. Many of our students choose to pursue further study at graduate schools across the US as well as at Maine. Maine offers programs leading to advanced degrees in Electrical Engineering and Computer Engineering. These programs are described in

the University of Maine Graduate School Catalog.

Cooperative "Work Experience" Program Option

Students are strongly encouraged to pursue a co-op work experience. These co-op experiences must be pre-approved by the student's advisor and the co-op coordinator. They may be taken during the summer as well as the fall or spring semesters. Summer-fall and spring-summer placements are particularly worthwhile. To gain additional practical experience many undergraduate students take advantage of opportunities to work with ECE faculty on research and development projects. Because many of these projects are related to real-world problems and may actually be sponsored by industry, students gain invaluable insight into how to apply their classroom learning to solve industrial problems. The Department strongly encourages both of these approaches through advising and by giving technical elective credit for substantial experiences.

Employment Opportunities

The Computer Engineering Program provides its graduates with the knowledge necessary to design systems based on computers and complex digital logic devices. They know how to select and interconnect the electronic and mechanical devices that make up a computer-based system. A computer engineer, through knowledge of both software and hardware can develop a complete solution to a given problem by assigning some tasks to hardware and others to software. Systems designed by computer engineers find use in such diverse tasks as computation, communication, instrumentation, networking, entertainment, information processing, artificial intelligence, and control. Although trained in both hardware and software, some graduates choose to emphasize one area after graduation, pursuing for example a career involving just software development. Graduates find employment with local, national, and international companies as well as government agencies. Specific examples include IBM, Lockheed Martin, National Semiconductor, Compaq, Tundra Semiconductor, Motorola, Champion Paper, and Hewlett Packard. For more examples please visit our Department web page at www.eece.maine.edu/ and click on the Alumni/ae link.

Scholarships

The department has several scholarships available on a competitive basis for students majoring in electrical and computer engineering. Outstanding incoming students should apply for college and departmental scholarships through the College of Engineering. Scholarship information is also available by following the "Perspective Students" link at the Department web page www.eece.maine.edu/

Suggested curriculum for the B.S. in Computer Engineering

The recommended sequence of the four-year curriculum is shown below. An updated version with a current detailed explanation of other curricular requirements should be obtained from www.eece.maine.edu/

There are many ways to arrange the curriculum to accommodate different goals. For example, one may obtain a double major, lighten the course load, or participate in a co-op work experience. Any variation from the above schedule should be done in consultation with the student's advisor. Early consultation is particularly important if a co-op work experience or double major is being considered.

First Year - First Semester

CHY 121 - Introduction to Chemistry	3
CHY 123 - Introduction to Chemistry Laboratory	1
ECE 101 - Introduction to Electrical and Computer Engineering	4
MAT 126 - Calculus I	4
PHY 121 - Physics for Engineers and Physical Scientists I	4

First Year - Second Semester

COS 220 - Introduction to Computer Science I	3
ECE 171 - Microcomputer Architecture and Applications	4
ENG 101 - College Composition	3
MAT 127 - Calculus II	4
PHY 122 - Physics for Engineers and Physical Scientists II	4

Second Year - First Semester

CMJ 103 - Fundamentals of Public Communication	3
COS 221 - Introduction to Computer Science II	3
ECE 210 - Electrical Networks I	3
MAT 228 - Calculus III	4
Engineering Science Elective	3

Second Year - Second Semester

ECE 211 - Electrical Networks II	3
ECE 214 - Electrical Networks Laboratory	3
ECE 275 - Sequential Logic Systems	3
MAT 258 - Introduction to Differential Equations with Linear Algebra	4
Basic Science Elective	4

Third Year - First Semester

COS 250 - Discrete Structures	3
or MAT 481 - Discrete Mathematics	3
ECE 300 - Seminar	1
ECE 314 - Linear Circuits and Systems	3
ECE 342 - Electronics I	4
Technical Elective	3

Third Year - Second Semester

CHB 350 - Statistical Process Control and Analysis	3
ECE 343 - Electronics II	4
ECE 401 - Electrical and Computer Engineering Design Project	1
ENG 317 - Business and Technical Writing	3
Human Values and Social Context Electives.	3
Technical Elective	3

Fourth Year - First Semester

COS 431 - Operating Systems	3
ECE 402 - Electrical and Computer Engineering Design Project	4
ECE 471 - Microprocessor Applications Engineering	3
Human Values and Social Context Elective	3
Technical Elective	3

Fourth Year - Second Semester

COS 420 - Introduction to Software Engineering	3
ECE 403 - Electrical and Computer Engineering Design Project	2
Human Values and Social Context Electives	9
Technical Elecive	3

Special Requirements:

Technical Electives

Students may use these courses to broaden their knowledge base or to specialize in areas like Industrial Control, Computer Hardware, Networking, Microelectronics, or Computer Graphics. Two technical electives must be ECE technical electives. Two technical electives may be selected from various engineering, math, computer science, or other technical offerings with the approval of the student's advisor. One or two technical electives may be co-op work experience.

Construction Management Technology

The Construction Management Technology program is a blend of civil engineering technology and construction business management. This is achieved by applying principles in civil engineering technology and management to the construction process. The Construction Management Technology program provides quality instruction in construction engineering technology and management to enable graduates to be professional constructors. This mission is fulfilled by providing students with a

foundation in mathematics, science, communications, social science and humanities; which are coupled with civil engineering technology and management principles leading to a rewarding career in the construction industry. Upon graduation students can expect to be able to:

- Demonstrate and apply acquired knowledge, techniques, skills, and modern tools of construction practice to emerging applications of construction practice using mathematics, science, engineering, and technology in order to improve construction processes.
- Apply creativity appropriate to construction processes by functioning effectively on teams that solve technical problems, through effective communications.
- Have the ability to pursue lifelong learning and have a commitment to quality, timely, and continuous improvement.
- Respect diversity and recognize professional, societal, ethical, and global responsibilities.

The student is taught a variety of civil engineering and management topics in a technical and rigorous curriculum. The primary focus is surveying, materials testing, structural analysis and design, highways, estimating, and heavy-highway/building methods and equipment. The curriculum features management courses that may lead to a minor in business. There is extensive use of computer applications throughout the program.

Employment Opportunities

With a Bachelor 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, contract administrators, and major facility owners. There may also be similar employment opportunities in other project-oriented industries, such as aircraft, aerospace, and shipbuilding. On the purely technical side, there are employment opportunities in soils, foundations, and building materials testing firms.

Suggested curriculum for the B.S. in Construction Management Technology

First Year - First Semester

CET 100 - Introduction to Construction Management	1
COS 101 - Introduction to PC Hardware and Windows	1
COS 102 - Introduction to the World Wide Web	1
COS 103 - Introduction to Spreadsheets	1
MET 121 - Technical Drawing	3
PHY 107 - Technical Physics I	4
TME 151 - Technical Mathematics I: Precalculus	3

First Year - Second Semester

CET 101 - Plane Surveying	3
CET 130 - Building Construction	3
ENG 101 - College Composition	3
PHY 108 - Technical Physics II	4
TME 152 - Technical Mathematics II: Precalculus and Introductory Calculus	3

Second Year - First Semester

CET 202 - Construction Surveying	3
CET 211 - Statics and Strength of Materials	4
CIE 110 - Materials	3
CIE 111 - Materials Laboratory	1
TME 253 - Applied Calculus for Engineering Technology	4

Second Year - Second Semester

CET 212 - Structural Design	4
CET 221 - Building Construction Methods	3
CET 224 - Construction Safety	1
CMJ 103 - Fundamentals of Public Communication	3
See Footnote 2	
ENG 212 - Persuasive and Analytical Writing	3
See Footnote 1	
MAT 215 - Introduction to Statistics for Business and Economics	3

Third Year - First Semester

BUA 201 - Principles of Financial Accounting I	3
CET 326 - Soil Mechanics and Foundations	3
CET 327 - Soil Mechanics and Foundations Lab	1
CET 351 - Construction Law	4
ECO 120 - Principles of Microeconomics	3
ENG 317 - Business and Technical Writing	3

Third Year - Second Semester

CET 332 - Civil Engineering Technology	3
CET 360 - Construction Estimating and Bidding	3
CMJ 257 - Business and Professional Communication	3
ECO 121 - Principles of Macroeconomics	3
Cultural Diversity and International Perspective Elective.	3
See Footnote 3	
Technical Elective.	3

Fourth Year - First Semester

BUA 325 - Principles of Management and Organization	3
CET 456 - Construction Documents and Administration	2
CET 457 - Construction Documents and Administration Lab	1
CET 462 - Construction Planning and Scheduling	3
Western Cultural Traditions Elective[3]	3
Population and the Environment Elective[3]	3

Fourth Year - Second Semester

BUA 331 - Labor-Management Relations	3
CET 458 - Management of Construction	3
MET 484 - Engineering Economics	3
CPC Exam[4]	
Technical Elective.	3
Artistic and Creative Expression Elective[3]	3

[1]ENG 417, ENG 418 and ENG 496 can be substituted for ENG 212 - only with advisor approval

[2]Fulfills the Social Context and 18 credit requirement.

[3]General Education Requirement Electives do not have to be taken in order shown. One of the Human Values/Social Context electives must fulfill the Ethics requirement or take TSO 360 as an extra course (1 credit).

[4]CPC Exam - Students must take the Certified Professional Constructors Exam before graduating.

Students must see their advisors for approval of all electives

Lists of approved courses that meet the General Education requirements and Technical Electives are available in 119 Boardman Hall.

Electrical Engineering

The Department of Electrical and Computer Engineering offers undergraduate and graduate degrees in both Electrical Engineering and Computer Engineering. Additional information about the Department and programs are available on the Web at www.eece.maine.edu.

The mission of the Electrical Engineering program is to provide quality education, research and public service in the discipline of electrical engineering. Toward accomplishing this mission the Department has set the following objectives for its Electrical Engineering curriculum:

- To assist and encourage students in developing a solid foundation in electrical engineering and some of its sub-disciplines.
- To guide students in their preparation for a broad range of career opportunities.
- To help students develop the ability to function in the workplace through teamwork and effective communication.
- To help students become aware of their moral, ethical, legal, and professional obligations to hold paramount the safety, health, and welfare of the public.

- To help students develop an appreciation for the necessity of lifelong learning.

Program Description

The Electrical Engineering curriculum provides students with the technical skills as well as the basic mathematical and scientific background required to advance current technology and contribute to future developments in the electrical engineering profession. The curriculum strives to instill critical written and oral communication skills in addition to providing a diverse background in the humanities and social sciences.

The curriculum adopts a practical hands-on approach that combines classroom theory and laboratory experience to produce an engineer who can carry a technical project from inception through to the implementation of a successful solution. The process begins in the first year of the program when students learn to prototype digital circuits and program micro-controller boards. It continues through the senior year when they complete their capstone design projects. In this latter case, students, usually working in two-person teams over three semesters, propose, specify, create, present, and demonstrate a solution to a technical problem of their choosing.

A double major leading to a BS in both Electrical and Computer Engineering is a popular option for many students. By a judicious choice of electives and early planning, this option can be achieved in an extra semester or by taking summer courses. Note that the first year curriculum is the same for electrical and computer engineers and that the sophomore year is very similar for the two majors. Students interested in the possibility of a double major should consult with their advisors early in their programs.

To obtain a BS 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 2.0 or better in all ECE courses. Any exception to the above policies requires approval of the Electrical and Computer Engineering faculty. The undergraduate degree is accredited by the Engineering Association Commission of the Accreditation Board for Engineering and Technology (ABET).

Our undergraduate program prepares students for graduate work as well as industry. Many of our students choose to pursue further study at graduate schools across the U.S. as well as at Maine. Maine offers programs leading to advanced degrees in Electrical Engineering and Computer Engineering. These programs are described in the University of Maine Graduate School Catalog.

Practical Experience

Students are strongly encouraged to pursue a co-op work experience. These co-op experiences must be pre-approved by the student's advisor and the co-op coordinator. They may be taken during the summer as well as the fall or spring semesters. Summer-fall and spring-summer placements are particularly worthwhile. To gain additional practical experience many undergraduate students take advantage of opportunities to work with ECE faculty on research and development projects. Because many of these projects are related to real-world problems and may actually be sponsored by industry, students gain invaluable insight into how to apply their classroom learning to solve industrial problems. The Department strongly encourages both of these approaches through advising and by giving technical elective credit for substantial experiences.

Employment Opportunities

There are many career paths open to electrical engineers - few professions have the breadth of opportunities offered by an electrical engineering education. In addition to technical careers, electrical engineers may enter totally different careers such as medicine, business, or teaching where their broad background and problem solving skills are a wonderful preparation. On the technical side, electrical engineers may choose research, development, sales, or management where they can use their understanding of electrical phenomena to solve problems in such diverse areas as energy, the environment, transportation, communications, and health care. Specific projects might include developing a new surgical tool, or artificial organ, or working on a more environmentally friendly energy generation system using advanced solar cell panels, or creating a new integrated circuit that would make computers more powerful and user-friendly. Our graduates find employment with local, national, and international companies as well as government agencies. Specific examples include IBM, Raytheon, National Semiconductor, Fairchild Semiconductor, Tundra Semiconductor, Sandia Labs, Sun Microsystems, Analog Devices, Mitre, International Paper, and Hewlett Packard. For more examples please visit our Department web page at www.eece.maine.edu and click on the Alumni/ae link.

Scholarships

The department has several scholarships available on a competitive basis for students majoring in electrical or computer engineering. Outstanding incoming students should apply for college and departmental scholarships through the College of Engineering. Scholarship information is also available by following the "Perspective Students" link at the department web page www.eece.maine.edu/

Suggested curriculum for the B.S. in Electrical Engineering

The recommended sequence of the four-year curriculum is shown below. An updated version with a current detailed explanation of other curricular requirements should be obtained from www.eece.maine.edu/

There are many ways to arrange the curriculum to accommodate different goals: For example, one may obtain a double major, lighten the course load, or participate in a co-op work experience. Any variation from the above schedule should be done in consultation with the student's advisor. Early consultation is particularly important if a co-op work experience or double major is being considered.

First Year - First Semester	
CHY 121 - Introduction to Chemistry	3
CHY 123 - Introduction to Chemistry Laboratory	1
ECE 101 - Introduction to Electrical and Computer Engineering	4
MAT 126 - Calculus I	4
PHY 121 - Physics for Engineers and Physical Scientists I	4
First Year - Second Semester	
COS 220 - Introduction to Computer Science I	3
ECE 171 - Microcomputer Architecture and Applications	4
ENG 101 - College Composition	3
MAT 127 - Calculus II	4
PHY 122 - Physics for Engineers and Physical Scientists II	4
Second Year - First Semester	
ECE 210 - Electrical Networks I	3
MAT 228 - Calculus III	4
Basic Science Elective	4
Engineering Science Elective	3
Human Values and Social Context Elective	3
Second Year - Second Semester	
CMJ 103 - Fundamentals of Public Communication	3
ECE 211 - Electrical Networks II	3
ECE 214 - Electrical Networks Laboratory	3
ECE 275 - Sequential Logic Systems	3
MAT 258 - Introduction to Differential Equations with Linear Algebra	4
Third Year - First Semester	
CHB 350 - Statistical Process Control and Analysis	3
ECE 300 - Seminar	1

ECE 314 - Linear Circuits and Systems	3
ECE 342 - Electronics I	4
ECE 351 - Fields and Waves	3
Third Year - Second Semester	
ECE 343 - Electronics II	4
ECE 401 - Electrical and Computer Engineering Design Project	1
ECE 414 - Feedback Control Systems	3
or Technical Elective	3
ECE 486 - Digital Signal Processing	4
or Human Values and Social Context Elective	3
ENG 317 - Business and Technical Writing	3
Technical Elective.	3
or Technical Elective.	3
or Human Values and Social Context Elective	3
Fourth Year - First Semester	
ECE 402 - Electrical and Computer Engineering Design Project	4
ENG 317 - Business and Technical Writing	3
or Technical Elective	3
Human Values and Social Context Elective	3
or Technical Elective	3
Technical Elective	3
Human Values and Social Context Elective	3
Fourth Year - Second Semester	
ECE 403 - Electrical and Computer Engineering Design Project	2
Technical Elective	3
or ECE 414 - Feedback Control Systems	3
Human Values and Social Context Elective	3
or ECE 486 - Digital Signal Processing	4
Human Values and Social Context Elective	3
Technical Elective	3-4

Special Requirements:
Technical Electives

Students may use these courses to broaden their knowledge base or to specialize in areas like Microelectronics, Sensors, Power and Industrial Control, Computer Hardware, or Communications and Signal Processing. Three technical electives, must be from the ECE Department. Two technical electives may be selected from various engineering, math, computer science, or other technical offerings with the approval of the student's advisor. One or two technical electives may be co-op work experiences.

Electrical Engineering Technology

The mission of the Electrical Engineering Technology program is to provide a quality education for its students and an outstanding professional development environment for its faculty and students.

To accomplish this mission, the Department has set the following educational objectives for its Electrical Engineering Technology curriculum.

- To prepare students to immediately contribute in the workplace upon graduation through exposure to state of the art industrial equipment, internship experience and design project experience.
- To prepare students in the business of engineering technology through the understanding of economic and business principles and effective project management techniques.
- To prepare students for the increasing computer requirements of industry through the use of computing hardware and software throughout the technical curriculum.
- To provide students with an appreciation for the ethical, legal and professional obligations necessary to function effectively in a contemporary business environment.
- To develop students' communication skills to a level that they can present complex ideas in a clear, logical and concise manner both orally and in writing.

Program Description

The Electrical Engineering Technology (EET) program at the University of Maine prepares students for professional electrical engineering careers in industry. The program provides students with the theory and "hands-on" experience necessary for them to quickly become productive in their jobs after graduation. The EET program offers two distinct paths to pursue the degree. These are the Electrical Option and the Information Technology Option.

1. **Electrical Option**: This option provides students with a traditional electrical and electronic engineering curriculum with extra concentration in subject areas that are particularly important to industry in the Northeast. These subject areas are: analog electronic design, integrated motion control, electrical machinery operation and microcomputer applications. All courses in the program are taught in a way that includes a strong component of practical applications, along with basic theoretical concepts.

2. **Information Technology Option**: An increasing industry demand for engineers with basic electrical hardware knowledge along with advanced network communication and management skills has led to this option. This pathway requires students to take the basic electrical courses during the first two years of the program and then branch to information technology courses in the last two years of the program. The eight information technology electives are taken in the areas of information science, management information systems, computer science and computer engineering.

Regardless of option selection, the EET degree requires students to gain an understanding of engineering management principles. Courses in engineering economics, statistical process control and project management are required of all graduates. This highlights the program's focus on preparing graduates for entry into the work force upon graduation. The program is constantly updated in response to input from an Industrial Advisory Committee that has representatives from manufacturing, power utilities, process industries, data communications and electronics companies.

The faculty in the EET program focus upon teaching the students. They all have significant industrial experience and serve actively as consulting professional engineers when not teaching. Program faculty teach all classes and laboratories. Thus, students learn first-hand about current industry trends and the latest engineering equipment.

A very important part of the education of all EET students is a Senior Design Project course that is taken during both semesters of their senior year. Design projects are required in most of the EET courses to prepare students for their capstone project. The Senior Design Project requires student teams to solve a design problem while utilizing good engineering design and reporting procedures.

Concentration and Minor Options

Students who wish to pursue the electrical option but still gain some experience in computer and data networking spplications may pursue a concentration in computer engineering technology. To achieve the concentration students are required to take 12 credits of approved courses offered by the computer engineering, information science and computer science departments for their free and technical elective choices.

The EET students can also enrich their academic experience by completing minors that complement their program such as business administration or pulp and paper technology.

Cooperative "Work Experience" Program Option

All EET students who have achieved sophomore status are encouraged to

participate in a well-established co-op program that allows students to receive course credit while gaining valuable experience with an industry of their choice. The department faculty work closely with key industrial partners to maintain cooperative education opportunities that are technically challenging and offer strong economic benefits.

Employment Opportunities

Graduates of the EET program fill a wide variety of professional technical positions in industry. Typically, they take jobs that involve designing and manufacturing a product or operating a plant. EET graduates are the electrical back-bone of the manufacturing community and often manage project and maintenance teams of electricians and engineers. Their responsibilities lean toward design and production rather than research.

Scholarships

The program offers scholarships for outstanding students majoring in Electrical Engineering Technology. In addition, students can apply for scholarships through the College of Engineering.

Suggested Curriculum for the B.S. in Electrical Engineering Technology

First Year - First Semester

EET 100 - Introduction to Electrical Engineering Technology	3
EET 111 - DC Circuit Analysis	4
ENG 101 - College Composition	3
PHY 107 - Technical Physics I	4
TME 151 - Technical Mathematics I: Precalculus	3

First Year - Second Semester

EET 112 - AC Circuit Analysis	4
EET 174 - Introduction to Microcomputers	4
PHY 108 - Technical Physics II	4
TME 152 - Technical Mathematics II: Precalculus and Introductory Calculus	3

Second Year - First Semester

EET 275 - Digital Electronics	4
TME 253 - Applied Calculus for Engineering Technology	4
COS Elective (COS 120, COS 215 or COS 220)	3
Free Elective.	3
Western Cultural Tradition Elective[1]	3

Students must declare Electrical or Information Technology Option at this point.

Electrical Engineering Technology Option:

Second Year - Second Semester

CMJ 103 - Fundamentals of Public Communication	3
EET 241 - Analog Circuit Fundamentals	4
EET 276 - Applications of Microcomputer Systems	4
TME 354 - Ordinary Differential Equations with Engineering Applications	3
Cultural Diversity and International Perpectives Elective[1]	3

Third Year - First Semester

CHY 121 - Introduction to Chemistry	3
CHY 123 - Introduction to Chemistry Laboratory	1
EET 342 - Advanced Analog Circuit Design	4
ENG 317 - Business and Technical Writing	3
Technical Elective	3

Third Year - Second Semester

BLE 462 - Power Transmission and Control	3
CHB 350 - Statistical Process Control and Analysis	3
EET 321 - Industrial Power and Sequential Automation	4
EET 386 - Project Management	3
Artistic and Creative Expression Elective[1]	3

Fourth Year - First Semester

EET 422 - Electric Machines and Power Electronics	4
EET 424 - Introduction to Electromechanical Systems	4
EET 451 - Senior Design Project I	1
MET 433 - Thermodynamics	3
Population and the Environment Elective[1]	3

Fourth Year - Second Semester

EET 425 - Design and Applications of Control Systems	4
EET 452 - Senior Design Project II	3
MET 484 - Engineering Economics	3
Technical Elective	3
Human Values/Social Context Elective[1]	3

Information Engineering Technology Option:

Second Year - Second Semester

CMJ 103 - Fundamentals of Public Communication	3
EET 241 - Analog Circuit Fundamentals	4
EET 276 - Applications of Microcomputer Systems	4
TME 354 - Ordinary Differential Equations with Engineering Applications	3
Cultural Diversity and International Perspectives Elective[1]	3

Third Year - First Semester

CHY 121 - Introduction to Chemistry	3
CHY 123 - Introduction to Chemistry Laboratory	1
ENG 317 - Business and Technical Writing	3
Technical Elective	3
IT Elective 1**	3
Free Elective	3

Third Year - Second Semester

CHB 350 - Statistical Process Control and Analysis	3
Artistic and Creative Expression Elective[1]	3
Technical Elective.	3
IT Elective 2**	3
IT Elective 3**	3
IT Elective 4**	3

Fourth Year - First Semester

EET 451 - Senior Design Project I	1
MET 433 - Thermodynamics	3
Population and the Environment Elective[1]	3
IT Elective 6**	3
IT Elective 7**	3
IT Elective 5**	3

Fourth Year - Second Semester

EET 452 - Senior Design Project II	3
MET 484 - Engineering Economics	3
IT Elective 8**	3
Human Values/Social Context Elective[1]	3
Technical Elective	3

Students must see their advisor for approval of all electives.

[1] General Education Requirement Electives do not have to be taken in the order shown. One of the Human Values/Social Context electives must also satisfy the ethics requirement of the General Education Requirements or take TSO 360 as an extra course. Credits: 1. Students must see their advisor for approval of all electives.

Lists of approved courses that meet the General Education requirements and Technical Electives are available in 119 Boardman Hall.

** Approved IT Electives are listed below or can be obtained from the SET Office in 119 Boardman Hall.

Approved Information Technology (IT) Electives

COS 221 - Introduction to Computer Science II	3
COS 230 - Computer Architecture and Assembly Language	3
COS 231 - Introduction to UNIX	3
COS 415 - Computer Simulation and Modeling, from Development to Display	3
COS 416 - Parallel Programming	3
COS 420 - Introduction to Software Engineering	3
COS 431 - Operating Systems	3
COS 440 - Computer Networks I	3
ECE 417 - Introduction to Robotics	3
ECE 431 - Introduction to Unix Systems Administration	3
ECE 434 - Biomedical Engineering	3
ECE 473 - Computer Architecture and Organization	3
ECE 477 - Hardware Applications Using C	3
ECE 478 - Industrial Computer Control	3

Engineering Physics

The Engineering Physics Program, offered by the Department of Physics and Astronomy, is designed for students who are interested in not only a particular engineering field, but also the physics and mathematics that provide a foundation for that field. Thus, the mission of the Engineering Physics Program is to offer an accredited Bachelor of Science degree that combines a meaningful sequence of engineering courses within a particular engineering field with a traditional high quality undergraduate physics education. The goals of the program are to prepare graduates to directly enter the modern workplace or go on to graduate study, either in their chosen engineering field or in physics.

The educational objectives of the program are to provide students with:

- a sound knowledge of the fundamental principles of engineering and physics, together with an appropriate mathematical background for these subjects.
- problem solving experience in engineering and physics, in both the classroom and the laboratory learning environment.
- an understanding of the role of the engineer/scientist in today's society.

Therefore, preparation also includes an introduction to the humanities, social sciences, communications and a sensitivity to issues of ethics and professional practice.

Furthermore, the program encourages majors to participate in student professional organizations, including the Society of Physics Students, the Society of Women Engineers and the various student societies within the student's chosen engineering field. In addition, majors frequently qualify for membership in the honor societies Sigma Pi Sigma and Tau Beta Pi, among others.

For further information visit our website: http://www.umephy.maine.edu/programs/programs.html

Program Description

The basic curriculum of required courses, combined with electives in science, engineering, the humanities and social sciences, culminates in a two-semester engineering design capstone experience. Of the 127 credits, 45 are electives, permitting each major, in consultation with his/her advisor, to put together a significant core of engineering courses in their engineering field of choice, and to satisfy the University General Education Requirements through electives supportive of their professional goals.

The program consists of a minimum of eight engineering courses, most of which lie in the student's area of engineering specialization, along with a technical elective and an engineering elective for a total of 24-30 credits. (A technical elective can be an Engineering, Physics, Astronomy, Chemistry, Mathematics, Computer Science or other approved science course, generally at the 300-level or higher.) The engineering sequence is chosen from the engineering major offerings (Chemical and Biological, Civil and Environmental, Electrical and Computer, Mechanical, etc) of the College of Engineering. Engineers teach all engineering courses taken by engineering physics majors.

The program requires a laboratory course in physics in each of eight semesters. These laboratory experiences emphasize the ability to conduct experiments, analysis and interpretation of data, working with modern instrumentation and meeting deadlines. When possible, students work in teams often alongside majors outside the College of Engineering. Most experiments require written laboratory reports. The junior year laboratory sequence is also a writing intensive experience. An English instructor meets regularly with majors to develop their technical writing skills, through assignments, guided revision and assessment.

Five courses in mathematics (in addition to a computer programming course) are required, with the upper level selections involving topics pertinent to engineering. A minor in mathematics can be earned with one additional mathematics course beyond these five plus PHY 476. Approximately 50% of graduating Engineering Physics majors earn a minor in mathematics.

The Engineering Physics program requires satisfactory completion of at least 127 credits at an accumulative grade point of not less than 2.0. The undergraduate degree is accredited by the Engineering Association Commission of the Accreditation Board for Engineering and Technology (ABET).

The Department of Physics and Astronomy offers graduate programs leading to the following degrees: Master of Engineering in Engineering Physics, Master of Science in Physics, and Doctor of Philosophy in Physics. Further information about these programs is contained in the Graduate Catalog.

Cooperative "Work Experience" Program Option

Engineering Physics majors who have completed their sophomore year can participate in the cooperative education program. This program integrates a practical work opportunity at an industrial facility (obtained through a specific period of employment) with on-campus classroom and laboratory experiences. Academic credit is received through enrollment in PHY 495 Engineering Physics Practice.

Employment Opportunities

Engineering Physics graduates work in industry, universities, government agencies and private practice. Most go directly to an engineering/physics employment opportunity immediately after graduation. Others continue their education in graduate programs in engineering, physics, law (patent law), business and medicine. Employment in industries producing electronics products, optical products and the nuclear/radiation medicine field is popular. Because the Engineering Physics major is familiar with both the practice of engineering and the scientific approach to problem solving, our students are often sought out for multidisciplinary employment opportunities. Recent multidisciplinary employment examples include navigation instrumentation (Lincoln Laboratories), nuclear radiation monitoring (The State of Maine), and optical and acoustical effects (The Walt Disney Corporation).

Scholarships

The Department of Physics and Astronomy has several large scholarship endowments. The Department awards between 25 and 35 scholarships each year to its undergraduate majors. The College of Engineering also offers scholarships and awards supported by endowments within the College and from Maine industries.

Suggested curriculum for the B.S. in Engineering Physics

The recommended sequence of the four-year curriculum is shown below. Copies can also be obtained in the Physics and Astronomy office with detailed explanations of the requirements. There are possible alterations to this schedule and substitutions may be made for some courses on approval of the Chairperson of the Department of Physics and Astronomy. Students desiring to transfer from another engineering program in their first or second year, into Engineering Physics, 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/her advisor.

First Year - First Semester	
CHY 121 - Introduction to Chemistry	3
CHY 123 - Introduction to Chemistry Laboratory	1
MAT 126 - Calculus I	4
PHY 121 - Physics for Engineers and Physical Scientists I	4
Human Values/Social Context and Ethics Elective	3
First Year - Second Semester	
COS 220 - Introduction to Computer Science I[1]	3
ENG 101 - College Composition	3
MAT 127 - Calculus II	4
PHY 122 - Physics for Engineers and Physical Scientists II	4
Engineering Sequence I[2]	3

Second Year - First Semester

MAT 228 - Calculus III	4
PHY 229 - Physical Measurements Laboratory I	2
PHY 236 - Introductory Quantum Physics	3
Human Values/Social Context and Ethics Elective[3]	3
Engineering Sequence II	3

Second Year - Second Semester

MAT 259 - Differential Equations	3
MET 107 - Machine Tool Laboratory I	2
PHY 223 - Special Relativity	1
PHY 230 - Physical Measurements Laboratory II	2
PHY 238 - Mechanics	3
Human Values/Social Context and Ethics Elective[3]	3
Engineering Sequence III	3

Third Year - First Semester

PHY 441 - Physical Electronics Laboratory	2
PHY 454 - Electricity and Magnetism I	3
PHY 476 - Mathematical Methods in Physics	3
Human Values/Social Context and Ethics Elective[3]	3
Engineering Sequence IV	3

Third Year - Second Semester

PHY 442 - Modern Experimental Physics	2
PHY 455 - Electricity and Magnetism II	3
PHY 472 - Geometrical and Fourier Optics	3
Human Values/Social Context and Ethics Elective[3]	3
MAT Elective[4]	3
Engineering Sequence V	3

Fourth Year - First Semester

PHY 469 - Quantum and Atomic Physics	3
PHY 481 - Project Laboratory in Physics I	3
PHY 488 - Physics Seminar I	1
PHY Elective[5]	3
Human Values/Social Context and Ethics Elective[3]	3
Engineering Sequence VI	3

Fourth Year - Second Semester

PHY 482 - Project Laboratory in Physics II	3
PHY 489 - Physics Seminar II	1
Engineering Sequence VII	3
Engineering Elective[7]	3
Technical Elective[6]	3
Free Elective	3

Special Requirements:

[1] Students with programming experience may substitute ECE 171, Microcomputer Architecture and Applications (Cr. 4). Other COS (e.g., COS 215) courses can be substituted. Course substitutions require the permission of an advisor.

[2] The Engineering Sequence consists of at least seven three-credit engineering courses, of which a minimum of five are in a single engineering area: Chemical and Biological, Civil and Environmental, Electrical and Computer, Mechanical or Spatial Information.

[3] Human Values/Social Context and Ethics, part of the university's general education requirements, can be satisfied by careful selection of at least six three-credit courses.

[4] Choose from MAT 262, MAT 332, MAT 434, MAT 452, MAT 453, MAT 454, MAT 459, MAT 471, PHY 574 or approved similar mathematics courses. PHY 574 may be counted as either a mathematics elective or a physics elective, but not both.

[5] Any physics or astronomy course at the 400-level or higher is appropriate. Students may elect to take PHY 462 Physical Thermodynamics instead of MEE 230 Thermodynamics I, however, PHY 462 cannot be used as one of the seven required engineering courses.

[6] A technical elective can be an Engineering, Physics, Astronomy, Chemistry, Mathematics, Computer Science or other approved science course, generally at the 300-level or higher.

[7] The engineering elective must be an engineering course outside the student's engineering concentration. A course used as an engineering elective can not be used as a technical elective.

All Engineering Physics students must take: MET 107, ECE 210 Electrical Networks I, and a thermodynamics course such as PHY 462 or MEE 230 (see Note 5 above).

Chemical Engineering Option in Engineering Physics - First two years

First Year - First Semester

CHB 111 - Introduction to Chemical and Biological Engineering I	2
CHY 121 - Introduction to Chemistry	3
CHY 123 - Introduction to Chemistry Laboratory	1
MAT 126 - Calculus I	4
PHY 121 - Physics for Engineers and Physical Scientists I	4
Human Values/Social Context and Ethics Elective	3

First Year - Second Semester

CHY 122 - The Molecular Basis of Chemical Change	3
CHY 124 - The Molecular Basis of Chemical Change Laboratory	1
COS 220 - Introduction to Computer Science I	3
ENG 101 - College Composition	3
MAT 127 - Calculus II	4
PHY 122 - Physics for Engineers and Physical Scientists II	4

Second Year - First Semester

CHB 200 - Fundamentals of Process Engineering	4
MAT 228 - Calculus III	4
PHY 229 - Physical Measurements Laboratory I	2
PHY 236 - Introductory Quantum Physics	3
Human Values/Social Context and Ethics Elective	3

Second Year - Second Semester

CHE 385 - Chemical Engineering Thermodynamics I	3
MAT 259 - Differential Equations	3
MET 107 - Machine Tool Laboratory I	2
PHY 223 - Special Relativity	1
PHY 230 - Physical Measurements Laboratory II	2
PHY 238 - Mechanics	3
Human Values/Social Context and Ethics Elective	3
Engineering Sequence III	3

Civil and Environmental Engineering Option in Engineering Physics - First two years

First Year- First Semester

CHY 121 - Introduction to Chemistry	3
CHY 123 - Introduction to Chemistry Laboratory	1
MAT 126 - Calculus I	4
PHY 121 - Physics for Engineers and Physical Scientists I	4
Human Values/Social Context and Ethics Elective	3

First Year - Second Semester

COS 215 - Introduction to Computing Using FORTRAN	3
ENG 101 - College Composition	3
MAT 127 - Calculus II	4
MEE 150 - Applied Mechanics: Statics	3
PHY 122 - Physics for Engineers and Physical Scientists II	4

Second Year - First Semester

MAT 228 - Calculus III	4
MEE 230 - Thermodynamics I	3
PHY 229 - Physical Measurements Laboratory I	2
PHY 236 - Introductory Quantum Physics	3
Human Values/Social Context and Ethics Elective	3

Second Year Second Semester

MAT 259 - Differential Equations	3
MET 107 - Machine Tool Laboratory I	2
PHY 223 - Special Relativity	1
PHY 230 - Physical Measurements Laboratory II	2
PHY 238 - Mechanics	3
Human Values/Social Context and Ethics Elective	3
Engineering Sequence III	3

Electrical and Computer Engineering Option in Engineering Physics - First two years

First Year - First Semester

CHY 121 - Introduction to Chemistry	3
CHY 123 - Introduction to Chemistry Laboratory	1
MAT 126 - Calculus I	4
PHY 121 - Physics for Engineers and Physical Scientists I	4
Human Values/Social Context and Ethics Elective	3

First Year - Second Semester

COS 220 - Introduction to Computer Science I	3
ECE 171 - Microcomputer Architecture and Applications	4
ENG 101 - College Composition	3
MAT 127 - Calculus II	4
PHY 122 - Physics for Engineers and Physical Scientists II	4

Second Year - First Semester

ECE 210 - Electrical Networks I	3
MAT 228 - Calculus III	4
MEE 230 - Thermodynamics I	3
PHY 229 - Physical Measurements Laboratory I	2
PHY 236 - Introductory Quantum Physics	3
Human Values/Social Context and Ethics Elective	3

Second Year - Second Semester

MAT 259 - Differential Equations	3
MEE 230 - Thermodynamics I	3
MET 107 - Machine Tool Laboratory I	2
PHY 223 - Special Relativity	1
PHY 230 - Physical Measurements Laboratory II	2
PHY 238 - Mechanics	3
Human Values/Social Context and Ethics Elective	3

Mechanical Engineering Option in Engineering Physics - First two years

First Year - First Semester

CHY 121 - Introduction to Chemistry	3
CHY 123 - Introduction to Chemistry Laboratory	1
MAT 126 - Calculus I	4
PHY 121 - Physics for Engineers and Physical Scientists I	4
Human Values/Social Context and Ethics Elective	3

First Year - Second Semester

COS 215 - Introduction to Computing Using FORTRAN	3
ENG 101 - College Composition	3
MAT 127 - Calculus II	4
MEE 150 - Applied Mechanics: Statics	3
PHY 122 - Physics for Engineers and Physical Scientists II	4

Second Year - First Semester

MAT 228 - Calculus III	4
MEE 251 - Strength of Materials	3
PHY 229 - Physical Measurements Laboratory I	2
PHY 236 - Introductory Quantum Physics	3
Human Values/Social Context and Ethics Elective	3

Second Year - Second Semester

MAT 259 - Differential Equations	3
MEE 230 - Thermodynamics I	3
MET 107 - Machine Tool Laboratory I	2
PHY 230 - Physical Measurements Laboratory II	2
PHY 238 - Mechanics	3
Human Values/Social Context and Ethics Elective	3

Biological Engineering Option in Engineering Physics - first two years

First Year - First Semester

BLE 122 - Introduction to Biological Engineering	1
CHB 111 - Introduction to Chemical and Biological Engineering I	2
CHY 121 - Introduction to Chemistry	3
CHY 123 - Introduction to Chemistry Laboratory	1
MAT 126 - Calculus I	4
PHY 121 - Physics for Engineers and Physical Scientists I	4
Human Values/Social Context and Ethics Elective	3

First Year - Second Semester

BIO 100 - Basic Biology	4
CHB 112 - Introduction to Chemical and Biological Engineering II	2
ENG 101 - College Composition	3
MAT 127 - Calculus II	4
PHY 122 - Physics for Engineers and Physical Scientists II	4

Second Year - First Semester

CHB 200 - Fundamentals of Process Engineering	4
MAT 228 - Calculus III	4
PHY 229 - Physical Measurements Laboratory I	2
PHY 236 - Introductory Quantum Physics	3
Human Values/Social Context and Ethics Elective	3

Second Year - Second Semester

COS 220 - Introduction to Computer Science I	3
MAT 259 - Differential Equations	3
MET 107 - Machine Tool Laboratory I	2
PHY 223 - Special Relativity	1
PHY 230 - Physical Measurements Laboratory II	2
PHY 238 - Mechanics	3
Human Values/Social Context and Ethics Elective	3

Information Systems Engineering

Individuals from all segments of society rely on information systems for communication, planning, control, and decision support. In response, information systems engineers design, implement and manage information systems based on their knowledge of engineering and scientific principles, computer technologies, and human cognition.

The undergraduate degree program in Information Systems Engineering (ISE) at the University of Maine offers an unequaled opportunity in New England for students to gain the knowledge necessary to use and develop a range of emerging information system technologies. These technologies may be put to use in responding to a host of economic, technical, social and cultural needs. As a graduate of the program you will be able to make a difference in how computer technologies, information systems and databases affect the everyday lives of people.

The *mission* of the Information Systems Engineering degree program is to educate students for professional practice by offering courses and experiences that promote creative discovery, foster teamwork and leadership and prepare students for lifelong learning. This is accomplished by a commitment to the highest possible standards of quality in the areas of teaching, research, advising, and service.

Our goal is to educate engineers and scientists who have a breadth of knowledge across the core subject matter of information systems engineering and can communicate and use that knowledge constructively for the benefit of others. Objectives in furtherance of this goal include assuring in our academic programs that students obtain foundation knowledge in mathematics, computation and basic science in order to pursue their engineering and science courses; gain knowledge in such a way that they can think independently and creatively; communicate their knowledge effectively to others and operate in society in a constructive, ethical and professional manner.

Detailed information about the program may be found at www.ise.umaine.edu/

Program Description

The undergraduate degree program in Information Systems Engineering (ISE) integrates a blend of multidisciplinary topics that enable students to effectively design next-generation information systems. We offer a focused yet interdisciplinary course of study. Students take courses in such topics as design basics for new media, information ethics, digital image processing, programming, human-computer interaction, digital video analysis, information system architec-

tures, information system design, network design and applications, information retrieval and electronic commerce. All students work on a team to accomplish a series of major design projects during a year-long senior capstone course.

Objectives of the Bachelor of Science Degree Program in Information Systems Engineering are to provide:

- A solid foundation in the theory and application of information systems design, development, and management;
- A background in the mathematics, computational tools, physical sciences, and engineering methods useful for information system engineers;
- Opportunities for creative, original and critical thinking in solving information system design problems
- Opportunities for development of strong verbal and written communication skills;
- Development of a sense of professional ethics and responsibility to the community;
- An appreciation of interpersonal and management skills, teamwork and an ability to work collaboratively;
- Appreciation and understanding of the social, economic, political, and legal context in which professional activities are undertaken.

The curriculum includes 37 required courses and 4 elective courses. The elective courses must satisfy the General Education requirements by selection from the approved list of Human Values and Social Context courses. Students completing the program are prepared for jobs in information systems fields or for study toward an advanced degree.

This degree requires satisfactory completion of at least 126 credits with an accumulative grade point of not less than 2.0. The student must have achieved a minimum grade of 2.0 (C) in all ISE courses.

The Information Systems Engineering undergraduate degree program is administered by the Department of Spatial Information Science and Engineering. This Department also offers highly active graduate programs leading to the following degrees: Master of Science in Information Systems, Master of Science in Spatial Information Science and Engineering, and PhD in Spatial Information Science and Engineering. Further information about these programs is available in the graduate catalog or at www.spatial.maine.edu/

Employment Opportunities

Information technologies are applied in all segments of society - from engineering and business applications to applications in law, ecology, health care, transportation and a wide range of additional domains. The information systems engineer may be called upon to design and develop databases, develop a system architecture, establish system standards, integrate an information system with varied data sources and networks, and generally to plan, integrate, design, test or operate information systems. Some are involved in advancing the technology itself; developing software and systems to enhance the ability of individuals, business, government and industry to better utilize information systems in their daily tasks. Others are more directly involved in developing and implementing information systems to meet specific needs, such as for a business or entertainment application. Some information system professionals are involved in managing or operating an information system for an organization taking on associated management responsibilities. Yet others are self-employed developing new innovative products and services for sale in the marketplace. The career opportunities are diverse, rewarding, intellectually stimulating, and fun. See the web site at www.ise.umaine.edu/ for links to demand studies and salary surveys.

Scholarships

The department has several scholarships available on a competitive basis for students majoring in information systems engineering. Outstanding incoming students should apply for college and departmental scholarships through the College of Engineering.

Suggested curriculum for the B.S. in Information Systems Engineering

A recommended curriculum in Information Systems Engineering is outlined below. Copies with detailed explanation of the requirements may also be obtained in the office of the Department of Spatial Information Science and Engineering. This curriculum can be modified within the constraints of all department and college requirements to meet the interests and scheduling needs of students.

First Year - First Semester

COS 220 - Introduction to Computer Science I	3
ECO 120 - Principles of Microeconomics	3
ENG 101 - College Composition	3
ISE 102 - Fundamentals of Information Systems	3
MAT 126 - Calculus I	4

First Year - Second Semester

CMJ 103 - Fundamentals of Public Communication	3
COS 221 - Introduction to Computer Science II	3
ISE 104 - Design Basics for New Media	3
ISE 112 - Using Geographic Information Systems	3
MAT 127 - Calculus II	4

Second Year - First Semester

ISE 201 - Principles of Geographic Information Systems	3
MAT 228 - Calculus III	4
PHY 121 - Physics for Engineers and Physical Scientists I	4
Elective - Anthropology/Sociology/History	3
Elective - Political Science/Philosophy/ Psychology	3

Second Year - Second Semester

ECE 171 - Microcomputer Architecture and Applications	4
ISE 206 - Project Design Lab: I	3
ISE 213 - Information Ethics	3
MAT 258 - Introduction to Differential Equations with Linear Algebra	4
or MAT 262 - Linear Algebra	3
PHY 122 - Physics for Engineers and Physical Scientists II	4

Third Year - First Semester

ENG 317 - Business and Technical Writing	3
ISE 301 - Formal Foundations for Information Systems	3
ISE 304 - Digital Image Processing	3
MAT 332 - Statistics for Engineers	3
Elective - Human Values and Social Context	3

Third Year - Second Semester

BUA 335 - Principles of Management Information Systems	3
ISE 302 - Information Systems Design	3
ISE 303 - Human-Computer Interaction	3
ISE 305 - Digital Video Analysis	3
ISE 350 - Junior Seminar	1
Elective - Human Value and Social Context	3

Fourth Year - First Semester

BUA 363 - Network Design and Applications	3
ISE 401 - Information System Architecture	3
ISE 404 - Time in Information Systems Design	3
ISE 405 - Statistics for Information Engineering	3
ISE 450 - Information Systems Project I	3

Fourth Year - Second Semester

BUA 368 - Electronic Commerce	3
ISE 402 - Information Retrieval	3
ISE 403 - Spatial Database Systems	3
ISE 406 - Image Metrology	3
ISE 451 - Information Systems Project II	3

Special Requirements

Humanities and Social Sciences Requirements:

Eighteen credits of HVSC are required for graduation. Twelve credits are met by ECO 120, CMJ 103, ISE 213, and ISE 104. The remaining six credits must be chosen from the approved list of courses specified for

Human Values and Social Context under the University of Maine's General Education Requirements.

National Level Test Requirement:

To assess the education and skills level of our graduates on a national basis students during their senior year are required to take the Graduate Record exam.

Ethics Requirement:

The program has an ethics requirement that can be met by taking ISE 213 - Information Ethics.

Mechanical Engineering

The mission of the Mechanical Engineering program is to prepare students for the future by providing a quality mechanical engineering education. The goals of the Department are to provide high quality education at both the undergraduate and graduate levels; to conduct basic research in mechanical engineering and related areas; and, to provide service to the profession, to the State of Maine, and the nation. The undergraduate program has been developed in order to prepare the student for the initiation of a professional career in mechanical engineering or for the continuation of studies in graduate school. Additional information can be found at the mechanical engineering Web site: http://www.umeme.maine.edu.

The objectives of the program are to prepare students for successful careers and lifelong learning by providing a solid foundation in the principles of mechanical engineering; to train students in the mathematical and computational skills appropriate for engineers to use when solving problems; to help students develop skills pertinent to the design process-ability to formulate problems, to think creatively, to communicate effectively, to synthesize information and to work collaboratively; and, to implant in the student an understanding of their professional and ethical responsibilities.

Program Description

This program develops the student's creative potential to meet the increasingly complex needs of industry, government and education. 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.

Engineers must address problems which raise issues requiring awareness of economical, 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.

In consultation with an academic advisor the student plans a program based on the following recommended curriculum. The format is a recommended program that can be modified within the constraints of all the departmental and college requirements and course prerequisites to satisfy scheduling needs or student preferences.

The curriculum has ten elective courses among the 41 courses (130 credits) required for the degree. Of the ten electives required one must be a basic science elective; one must be an engineering science elective; two must be mechanical engineering design electives; and, six of the electives must satisfy the Human Values and Social Context areas of the general education requirements. Students must also complete a course placing substantial emphasis on the discussion of ethics. 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 subjects. Some mechanical engineering electives will not be offered every year.

In addition to meeting all university academic requirements, a mechanical engineering student must also have a minimum GPA of 2.0 in all MEE courses. The program in Mechanical Engineering is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET).

Cooperative "Work Experience" Program Option

The department provides students the opportunity to participate in a cooperative education program. The program is under the direction of a mechanical engineering co-op coordinator.

Employment Opportunities

Mechanical engineers work in industry, consulting practices, universities and governmental agencies. Many mechanical engineers are employed by equipment manufacturers, aerospace companies, shipbuilding firms, material processing plants, utilities, transportation companies, petroleum companies, and a host of other firms. Mechanical engineers 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. Mechanical engineers working with government agencies conduct research on solar energy, advanced composite materials, radioactive waste removal, magnetic-levitation trains, and components associated with the space program.

Scholarships

The department has several scholarships available on a competitive basis for students majoring in mechanical engineering. Outstanding incoming students should apply for college and departmental scholarships through the College of Engineering.

Suggested Curriculum for the B.S. in Mechanical Engineering

The recommended sequence of the four-year curriculum is shown below. Copies can also be obtained in the Mechanical Engineering office with detailed explanations of the requirements. This program can be adapted to a student's special scheduling needs in consultation with an academic advisor.

First Year - First Semester	
ENG 101 - College Composition	3
MAT 126 - Calculus I	4
MEE 101 - Introduction to Mechanical Engineering	1
PHY 121 - Physics for Engineers and Physical Scientists I	4
Human Values and Social Context Elective	3
First Year - Second Semester	
COS 215 - Introduction to Computing Using FORTRAN	3
MAT 127 - Calculus II	4
MEE 150 - Applied Mechanics: Statics	3
PHY 122 - Physics for Engineers and Physical Scientists II	4
Human Values and Social Context Elective	3
Second Year - First Semester	
CHY 121 - Introduction to Chemistry	3
CHY 123 - Introduction to Chemistry Laboratory	1
MAT 228 - Calculus III	4
MEE 230 - Thermodynamics I	3
MEE 251 - Strength of Materials	3
Human Values and Social Context Elective	3
Second Year - Second Semester	
ECE 210 - Electrical Networks I	3
MAT 258 - Introduction to Differential Equations with Linear Algebra	4
MEE 231 - Thermodynamics II	3
MEE 270 - Applied Mechanics: Dynamics	3
Basic Science Elective	4
Third Year - First Semester	
ENG 317 - Business and Technical Writing	3
MAT 332 - Statistics for Engineers	3

MEE 360 - Fluid Mechanics	3
MEE 370 - Modeling, Analysis and Control of Mechanical Systems	3
MEE 380 - Design I	3
Human Values and Social Context Elective	3
Third Year - Second Semester	
MEE 320 - Materials Engineering and Science	3
MEE 341 - Mechanical Laboratory I	3
MEE 381 - Design II	4
MEE 456 - Introduction to the Finite Element Method	3
MEE 471 - Mechanical Vibrations	3
Fourth Year - First Semester	
MEE 432 - Heat Transfer	3
MEE 442 - Mechanical Laboratory II	2
MEE 487 - Design III	4
Engineering Science Elective	3
Mechanical Engineering Design Elective	3
Fourth Year - Second Semester	
MEE 443 - Mechanical Laboratory III	3
MEE 488 - Design IV	4
MEE Mechanical Engineering Design Elective	3
Human Values and Social Context Elective	3
Human Values and Social Context Elective	3

Mechanical Engineering Technology

The mission of the Mechanical Engineering Technology Program is to provide a quality education program in Mechanical Engineering Technology and to support the mission of the College of Engineering.

The goals of the Program are to provide quality undergraduate instruction; to support quality research directed toward the discovery and advancement of knowledge in engineering and engineering science; and to provide development, support, and education for industry and individuals.

The specific educational objectives are to:

- Provide students with a sound knowledge of the fundamental principles of mathematics, science, and mechanical engineering technology.
- Develop in graduates critical thinking and problem solving skills that can be applied to a wide range of problems - both technical and non-technical.
- Provide the skills necessary for the practice of engineering technology.
- Provide a well-balanced educational experience that will help the student develop communication and teamwork skills, an appreciation of social values and an understanding of the implications of technology.
- Ensure that courses required for a degree in the program remain technically current and responsive to the changing needs of society.

Program Description

The field of Mechanical Engineering Technology (MET) 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 optional Co-op program is also encouraged.

Employment Opportunities

Graduates work in a wide range of careers including product development, design, testing, manufacturing, operation and maintenance, marketing, sales and administration.

Suggested curriculum for the B.S. in Mechanical Engineering Technology

Students must consult with their advisors for approval of all electives.

Lists of approved courses that meet the General Education requirements and Technical Electives are available in 119 Boardman Hall.

First Year - First Semester	
ENG 101 - College Composition	3
MET 100 - Introduction to Mechanical Engineering Technology	2
MET 121 - Technical Drawing	3
PHY 107 - Technical Physics I	4
TME 151 - Technical Mathematics I: Precalculus	3
First Year - Second Semester	
MET 107 - Machine Tool Laboratory I	2
MET 126 - Machine Drawing	3
MET 150 - Statics	3
PHY 108 - Technical Physics II	4
TME 152 - Technical Mathematics II: Precalculus and Introductory Calculus	3
Second Year - First Semester	
CHY 121 - Introduction to Chemistry	3
CHY 123 - Introduction to Chemistry Laboratory	1
MET 219 - Strength of Materials	4
MET 233 - Thermal Science	3
MET 270 - Manufacturing Technology	3
TME 253 - Applied Calculus for Engineering Technology	4
Second Year - Second Semester	
CMJ 103 - Fundamentals of Public Communication	3
COS 120 - Introduction to Programming I	3
INT 211 - (CHB, MET) Introduction to CAM and Welding	2
MET 234 - Mechanical Technology Laboratory I	2
MET 236 - Thermal Applications	3
Third Year - First Semester	
EET 330 - Electrical Applications	4
ENG 317 - Business and Technical Writing	3
MET 312 - Machine Tool Processing II	3
MET 317 - Dynamics	4
Technical Elective	3
Third Year - Second Semester	
MET 325 - Fluid Flow Technology	3
MET 355 - Engineering Materials	3
TME 354 - Ordinary Differential Equations with Engineering Applications	3
Western Cultural Tradition Elective[1]	3
Cultural Diversity and International Perspectives Elective[1]	3
Fourth Year - First Semester	
MET 462 - Design I	4
MET 484 - Engineering Economics	3
Technical Elective.	3
Technical Elective.	3
Population and the Environment Elective[1]	3
Fourth Year - Second Semester	
MET 463 - Design II	4
Technical Elective	3
Ethics Elective[1]	3
Free Elective	3
Artistic and Creative Expression Elective[1]	3

[1]General Education requirement electives do not need to be taken in order shown. Student must select a Human Values/ Social Context elective that will also qualify as an ethics elective or take TSO 360 as an extra course (1 credit).

Pulp and Paper Technology

Manufacture of pulp and paper products from wood and other fiber sources 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 in the United States to study pulp and paper engineering and continues to provide instruction in the multidisciplinary application of engineering sciences to the varied and complex operations of the forest products 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. More information about pulp and paper technology can be found on our web site www.umecheme.maine.edu/che.

Program Description

Students with a special interest in the pulp and paper industry can elect a four year BS program leading to the degree of Bachelor of Science in Pulp and Paper Technology. The curriculum is process-engineering oriented and is broadly similar to the regular chemical engineering program. However, specialized courses relating directly to the pulp and paper industry are substituted for some of the more general courses required in the chemical engineering program. The degree requires successful completion of 132 credits with a grade point average of at least 2.0.

Cooperative "Work-Experience" Program Option

Students with satisfactory academic standing at the end of their fourth semester may elect to participate in the "Co-Op" program. This fifteen month program, which is undertaken during the junior year, involves a combination of two fourteen week periods of supervised (paid) professional experience as a junior engineer separated by a regular academic term and either followed or preceded by a summer term at Orono. Participating students must register for six credits but, in general, these cannot be substituted for the courses required for the BS degree.

Employment Opportunities

Graduates of this program generally find employment in the pulp and paper industry where they fulfill many of the functions commonly performed by chemical engineers, including research and development, process design, control, operation and management of production facilities and technical sales.

Scholarships

More than half of the Pulp and Paper Technology undergraduates enjoy some degree of financial support from the Pulp and Paper Foundation. This ranges from $1,000 bursaries to first-year students to full (in state) tuition scholarships for sophomores and higher level students. In exceptional cases out of state tuition may also be covered. The scholarships are merit based and are restricted to students who intend to make their careers in the pulp and paper or related industries. Further information can be obtained from Peter Duncan, Executive Director of the Pulp and Paper Foundation, The University of Maine, Orono, ME 04469-5737 Phone (207) 581-2298, e-mail: woodcock@maine.edu.

Advanced Study in Pulp and Paper Management

Students with a BS engineering degree can program a fifth-year extension of their undergraduate curriculum to fulfill requirements for a Fifth-Year Certificate in 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 involves an elective sequence to develop special interests in process engineering, systems engineering, environmental 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 BS 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 the five year program. The BS degree and the certificate are awarded concurrently at the end of the fifth year.

Requirements for a Fifth-Year Certificate in Pulp and Paper Management include the successful completion of a minimum of 30 credits beyond the BS degree requirements. These credits 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 outside the Department of Chemical Engineering. 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 the Fifth-Year Certificate in Pulp and Paper Management can be completed within one academic year beyond the BS degree.

The certificate program may be taken concurrently with some MS 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 MS program unless prior permission by the student's graduate advisory committee has been obtained.

Suggested curriculum for the B.S. in Pulp and Paper Technology

The recommended sequence of the four-year curriculum is shown below. Copies can also be obtained in the Chemical Engineering office with detailed explanations of the requirements. This program can be adapted to a student's special scheduling needs in consultation with an academic advisor.

First Year - First Semester

CHB 111 - Introduction to Chemical and Biological Engineering I	2
CHY 121 - Introduction to Chemistry	3
ENG 101 - College Composition	3
MAT 126 - Calculus I	4
PHY 121 - Physics for Engineers and Physical Scientists I	4

First Year - Second Semester

CHB 112 - Introduction to Chemical and Biological Engineering II	2
CHY 122 - The Molecular Basis of Chemical Change	3
CHY 124 - The Molecular Basis of Chemical Change Laboratory	1
MAT 127 - Calculus II	4
PHY 122 - Physics for Engineers and Physical Scientists II	4
Human Values and Social Context Elective	3

Second Year - First Semester

CHB 200 - Fundamentals of Process Engineering	4
CHY 251 - Organic Chemistry I	3
CHY 253 - Organic Chemistry Laboratory I	2
MAT 228 - Calculus III	4
MEE 230 - Thermodynamics I	3

Second Year - Second Semester

CHB 350 - Statistical Process Control and Analysis	3
CHY 252 - Organic Chemistry II	3
MAT 258 - Introduction to Differential Equations with Linear Algebra	4
MEE 231 - Thermodynamics II	3
PPA 264 - Introduction to the Pulp and Paper Industry	3

Third Year - First Semester

CHE 360 - Elements of Chemical Engineering I	4
CHY 371 - Physical Chemistry I	3
PPA 465 - Pulp Technology	3
Technical Elective.	3
Human Values and Social Context Elective	3

Third Year - Second Semester

CHE 362 - Elements of Chemical Engineering II	4
CHY 483 - Introductory Wood Chemistry	3
ECE 210 - Electrical Networks I	3
PPA 466 - Paper Technology	3
Human Values and Social Context Elective	3

Fourth Year - First Semester

CHE 477 - Elements of Chemical Process Design	3
MEE 150 - Applied Mechanics: Statics	3
PPA 473 - Pulp Manufacture and Testing	4
Human Values and Social Context Elective	3
Technical Elective	3

Fourth Year - Second Semester

MEE 251 - Strength of Materials	3
PPA 474 - Paper Manufacture and Testing	4
Human Values and Social Context Elective	3
Technical Elective	3
Human Values and Social Context Elective	3

Special Requirements:

Engineering Science Courses

CHE 385 and CHE 386 may be substituted for MEE 230 and MEE 231.

Technical Electives (6 credits):

The program must include six credits of technical elective courses at the 300 or 400 level. Courses should be selected as part of a coherent plan and approved by the academic advisor. Courses in wood science and chemical engineering are recommended: WSC 314 (Wood and Wood Fiber Processing); WSC 416 (Wood Anatomy); WSC 425 (Mechanical Properties of Wood); WSC 430 (Wood Composites and Adhesion); CHE 368 (Kinetics and Reactor Design); CHE 352 (Process Control); CHE 478 (Computer Aided Process Design), etc. Other science and engineering courses at the 300 level and above may be allowed with permission of the Chair.

Surveying Engineering Technology

The Surveying Engineering Technology program trains individuals to enter a career in professional surveying. The program is designed to provide a graduate with sufficient skills to enter surveying practice and succeed.

The Surveying Engineering Technology program provides quality instruction in surveying and engineering topics blended with business and communications. The objective of the program is fulfilled by providing students with a foundation in mathematics, science, communications, social science, and humanities; coupled with topics in plane surveying, construction surveying, photogrammetry, remote sensing, boundary law, civil engineering technology, cadastral surveying, global positioning systems, land development design, and geographic information systems. Upon graduation students can expect to be able to:

- Demonstrate and apply acquired knowledge, techniques, skills, and modern tools of surveying practice to emerging applications of surveying using mathematics, science, engineering, and technology to provide and improve surveying services.
- Apply creativity appropriate to the surveying process by functioning effectively on teams that solve technical problems, through effective communications and application of surveying engineering technology.
- Have the ability to pursue lifelong learning and have a commitment to quality, timeliness and continuous improvement in the profession of surveying.
- Recognize professional, societal, ethical, and global responsibilities while respecting diversity.

The student is taught a variety of surveying topics in a highly technical and rigorous curriculum. The primary focus is educating students to enter a rewarding career as a professional land surveyor. Students that enjoy outdoor activities will enjoy a career in land surveying.

Suggested Curriculum for the B.S. in Surveying Engineering Technology

First Year - First Semester

COS 101 - Introduction to PC Hardware and Windows	1
COS 102 - Introduction to the World Wide Web	1
COS 103 - Introduction to Spreadsheets	1
MET 121 - Technical Drawing	3
PHY 107 - Technical Physics I	4
SVT 100 - Introduction to Surveying Technology	1
SVT 110 - Instrumentation and Data Collectors	1
TME 151 - Technical Mathematics I: Precalculus	3

First Year - Second Semester

CET 101 - Plane Surveying[3]	3
ENG 101 - College Composition	3
PHY 108 - Technical Physics II	4
TME 152 - Technical Mathematics II: Precalculus and Introductory Calculus	3
CAD Course[1]	3

Second Year - First Semester

CET 202 - Construction Surveying	3
CMJ 103 - Fundamentals of Public Communication	3
MAT 215 - Introduction to Statistics for Business and Economics	3
TME 253 - Applied Calculus for Engineering Technology	4
Program Elective[1]	3

Second Year - Second Semester

CET 332 - Civil Engineering Technology	3
ENG 212 - Persuasive and Analytical Writing[4]	3
FTY 206 - Photogrammetry and Remote Sensing	3
SVT 201 - Adjustment Computations	3
SVT 221 - Boundary Law	4

Third Year - First Semester

BUA 201 - Principles of Financial Accounting I	3
ENG 317 - Business and Technical Writing	3
SVT 329 - Site Planning and Subdivision Design	1
SVT 341 - Advanced Surveying	3
Cultural Diversity Elective[2]	3
Population and the Environment Elective[2]	3

Third Year - Second Semester

CMJ 257 - Business and Professional Communication	3
MET 484 - Engineering Economics	3
SVT 352 - Practical Field Operations	3
Law or Environmental Elective[1]	3
Program Elective.	3

Fourth Year - First Semester

ECO 120 - Principles of Microeconomics	3
SVT 418 - Fundamentals of Surveying Exam Overview	1
SVT 437 - Practical GPS	3
SVT 475 - Small Business Management	3
Program Elective1	3
Program Elective1	3

Fourth Year - Second Semester

FTY 480 - Applied Geographic Information Systems	3
TSO 360 - Engineering Ethics	1
Fundamentals Surveying Exam (passing not required).	0
Western Cultural Tradition Elective[2]	3
Program Elective[1]	3
Artistic and Creative Expression Elective[2]	3

Students must see their advisor for approval of all electives.

[1]Lists of approved courses that meet the General Education requirements and Program Electives are available in 119 Boardman Hall.

[2]General Education Requirement Electives do not have to be taken in the order shown.

[3]May substitute FTY 208 - Forest Surveying and Mapping with permission of advisor.

[4]ENG 417, ENG 418, and ENG 496 can be substituted for ENG212 - Persuasive and Analytical Writing - only with advisor approval.

College of Engineering Minors

In the College of 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. All students obtaining a minor in Engineering are required to obtain a GPA of at least 2.0 in the minor with no more than one grade less than C-. Engineering students cannot receive a minor offered by their major department.

Construction Management Technology: (18 credit hours)

A minor in Construction Management Technology requires at least 18 credit hours in construction management technology courses. One or more courses must include scheduling and estimating. Approval of a course of study by a Construction Management Technology faculty advisor is required.

Digital Systems: (23 credit hours)

COS 220 - Introduction to Computer Science I 3
ECE 171 - Microcomputer Architecture \ and Applications 4
ECE 210 - Electrical Networks I 3
ECE 211 - Electrical Networks II 3
ECE 275 - Sequential Logic Systems 3
ECE 471 - Microprocessor Applications Engineering 3
ECE 477 - Hardware Applications Using C 3

Electronic Instrumentation: (23 credits, 14 credits of core courses and at least 9 credits for optional ECE courses)

Core courses:
ECE 210 - Electrical Networks I 3
ECE 211 - Electrical Networks II 3
ECE 275 - Sequential Logic Systems 3
ECE 342 - Electronics I 4

Examples of Optional Courses:
ECE 343 - Electronics II 4
ECE 351 - Fields and Waves 3
ECE 465 - Introduction to Sensors 3
ECE 466 - Sensor Technology and Instrumentation 4
ECE 471 - Microprocessor Applications Engineering 3
ECE 477 - Hardware Applications Using C 3
ECE 478 - Industrial Computer Control 3

Engineering Entrepreneurial: (18 credit hours)

With permission of the administrator of the minor, a student can substitute other courses for the following courses.
BUA 201 - Principles of Financial Accounting I 3
BUA 220 - Legal Environment of Business[1] 3
ECO 120 - Principles of Microeconomics 3
or ECO 121 - Principles of Macroeconomics 3
SVT 475 - Small Business Management 3
MET 484 - Engineering Economics.[2] 3
EET 386 - Project Management.[3] 3

[1]CET 351 - Construction Law has been approved by BUA to substitute for BUA 220.
[2]Students may substitute CET 462 - Construction Planning and Scheduling *or* CIE 412 - Project Management. (plus one credit), for this course.
[3]Students may substitute CIE 412 - Engineering Decisions. *plus* TSO 360 - Engineering Ethics.

Environmental Quality: (18 credit hours)

CIE 231 - Fundamentals of Environmental Engineering 3
CIE 350 - Hydraulics 3
CIE 351 - Hydraulics Laboratory 1
CIE 431 - Pollutant Fate and Transport 4
CIE 432 - Water and Wastewater Process Design 4
CIE 455 - Hydrology 3
or CIE 456 - Groundwater Hydrology and Hydraulics 3

Fluid Mechanics: (18 credit hours)

MEE 150 - Applied Mechanics: Statics 3
MEE 230 - Thermodynamics I 3
MEE 270 - Applied Mechanics: Dynamics 3
MEE 360 - Fluid Mechanics 3
MEE 456 - Introduction to the Finite Element Method 3
MEE 462 - Fluid Mechanics II 3

Naval Science: (23 credit hours)

Core Courses
BUA 325 - Principles of Management and Organization 3
HTY 280 - Naval History 3
or NAV 202 Sea Power and Maritime Affairs 3
NAV 101 - Introduction to Naval Science 2
NAV 102 - Naval Ships Systems I (Engineering) 3
NAV 201 - Naval Ships Systems II (Weapons) 3
NAV 202 - Sea Power and Maritime Affairs 3
NAV 304 - Naval Leadership and Ethics 3

Additional Courses
One of the following combinations: (6 cr.)
NAV 301 - Navigation and Naval Operations I 3
with NAV 302 - Navigation and Naval Operations II 3
or NAV 310 - Evolution of Warfare 3
with NAV 410 - Amphibious Warfare 3

Process Engineering: (23 credit hours)

CHB 200 - Fundamentals of Process Engineering 4
CHE 352 - Process Control 3
CHE 360 - Elements of Chemical Engineering I 4
CHE 362 - Elements of Chemical Engineering II 4
CHE 385 - Chemical Engineering Thermodynamics I 3
or CHE 386 - Chemical Engineering Thermodynamics II 3
CHE Electives 5

Pulp and Paper Technology: (18-20 credit hours)

BMB 221 - Organic Chemistry 3
CHE 498 - Special Topics in Chemical Engineering 1-3
CHY 121 - Introduction to Chemistry 3
PPA 264 - Introduction to the Pulp and Paper Industry 3
PPA 466 - Paper Technology 3
PPA 474 - Paper Manufacture and Testing 4

Solid Mechanics: (18 credit hours)

MEE 150 - Applied Mechanics: Statics 3
MEE 251 - Strength of Materials 3
MEE 270 - Applied Mechanics: Dynamics 3
MEE 453 - Experimental Mechanics 3
MEE 455 - Advanced Strength of Materials 3
MEE 456 - Introduction to the Finite Element Method 3

Structures: (19 credit hours)

CIE 340 - Introduction to Structural Analysis 4
CIE 440 - Structural Analysis I 4
CIE 442 - Reinforced Concrete Design 4
CIE 443 - Structural Steel Design 4
MEE 251 - Strength of Materials 3

Thermodynamics: (18 credit hours)

MEE 150 - Applied Mechanics: Statics 3
MEE 230 - Thermodynamics I 3
MEE 231 - Thermodynamics II 3
MEE 360 - Fluid Mechanics 3
Plus any two of the following:
MEE 483 - Turbomachine Design 3
MEE 484 - Power Plant Design and Engineering 3

MEE 486 - Refrigeration and Air Conditioning System Design 3

Water Resources: (20 credit hours)

CIE 231 - Fundamentals of Environmental Engineering 3
CIE 350 - Hydraulics 3
CIE 351 - Hydraulics Laboratory 1
CIE 431 - Pollutant Fate and Transport 4
CIE 450 - Open Channel Hydraulics 3
CIE 455 - Hydrology 3
CIE 456 - Groundwater Hydrology and Hydraulics 3

College of Engineering Interdisciplinary Curriculum

Biomedical Engineering: (19 credit hours)

The interdisciplinary curriculum in Biomedical Engineering is open only to students in the College of Engineering. The curriculum seeks to introduce engineering students to the growing applications of engineering in the field of biomedical.

Core Courses (13-14 credits)
BIO 208 - Anatomy and Physiology 4
INT 121 - (CHB) Introduction to Biomedical Engineering 1
INT 421 - (CHB) Directed Study in Biomedical Engineering 1-3
NUR 423 - Ethical Issues in Health Care 3
PHI 235 - Biomedical Ethics 3
or NUR 423 Ethical Issues 3

Lecture/Laboratory Course Pairs
The student must select one of the following lecture/laboratory course pairs: (4-5 cr.)
BMB 221 - Organic Chemistry 3
BMB 222 - Laboratory in Organic Chemistry 1
or CHY 251, Organic Chemistry I 3
BMB 305 - General Microbiology Laboratory 2
or BMB 322 Biochemistry 3
BMB 323 - Introductory Biochemistry Laboratory 1
CHY 253 - Organic Chemistry Laboratory I 2
or BMB 300 General Microbiology 3

Optional Courses
(At least 6 credits from this list):
BLE 434 - Engineering of Biological Systems 3
BLE 497 - Special Problems in Biological Engineering Ar
CHE 498 - Special Topics in Chemical Engineering 1-3
ECE 314 - Linear Circuits and Systems[2] 3
ECE 343 - Electronics II 4
ECE 417 - Introduction to Robotics 3
ECE 465 - Introduction to Sensors 3
ECE 466 - Sensor Technology and Instrumentation 4
MEE 270 - Applied Mechanics: Dynamics[1,3] 3
MEE 320 - Materials Engineering and Science[3] 3
MEE 453 - Experimental Mechanics 3
MEE 471 - Mechanical Vibrations 3
PHY 447 - Molecular Biophysics 3-4

[1]cannot be used for minor by students in BLE program
[2]cannot be used for minor by students in ECE program
[3]cannot be used for minor by students in MEE program

College of Liberal Arts and Sciences

The College of Liberal Arts and Sciences dedicated to providing a sound education the liberal arts and to imparting the pecific knowledge and skills required for areers in one of its many representative isciplines. This education, both in its readth and its approach to learning, leads udents to an enlightened sense of themlves, their heritage, their world; prepares hem for responsible and active citizenship; nd prompts those habits of thought and xpression crucial to a lifetime of active arning. A major goal of the college is to rovide students with the ability to think ndependently, to analyze, and to achieve ndependent judgment.

chools and Departments:

Department of Anthropology
Department of Art
Department of Chemistry
Department of Communication and Journalism
Department of Communication Sciences and Disorders
Department of Computer Science
Department of Economics
Department of English
Department of History
Department of Mathematics and Statistics
Department of Modern Languages and Classics
Department of Philosophy
Department of Physics and Astronomy
Department of Political Science
Department of Psychology
Department of Sociology
School of Performing Arts

pecialized Units:

Franco American Center
Intensive English Institute
Maine Folklife Center
Museum of Art
National Poetry Foundation
Native American Studies
Wabanaki Center
Women in the Curriculum

CADEMIC PROGRAMS:

achelor of Arts in:
Anthropology
Art Education
Art History
Chemistry
Communication
Communication Sciences and Disorders
Computer Science
Economics
English
Financial Economics
French
German
History
Interdisciplinary Studies
International Affairs (in Anthropology, Economics, Foreign Languages, History or Political Science)
Journalism
Latin
Mass Communication
Mathematics
Modern Languages
Music
New Media
Philosophy
Physics
Political Science
Psychology
Romance Languages
Sociology
Spanish
Studio Art
Theater
Women's Studies

Bachelor of Fine Arts in:
Studio Art

Bachelor of Music in:
Music Education
Music Performance

Bachelor of Science in:
Chemistry
Computer Science
Physics

Minors:
Anthropology
Art History
Astronomy
Canadian Studies
Chemistry
Classical Studies
Communication
Computer Science
Dance
Economics
English
Franco-American Studies
French
German
History
International Affairs
Latin
Latin American Studies
Linguistics
Marxist and Socialist Studies
Mathematics
Medieval and Renaissance Studies
Modern and Classical Languages
Music
Museum Education
Museum Studies
Native American Studies
Philosophy
Physics
Political Science
Psychology
Public Relations
Religious Studies
Rhetoric and Writing
Sociology
Spanish
Studio Art
Theater
Women's Studies

College of Liberal Arts and Sciences Graduation Requirements:

In order to graduate from the College, students must be in good academic standing, i.e., not on academic probation. Any student who was admitted on a "CONDITIONAL" status lacking a required high school unit must have this condition removed. In addition, the following must be satisfied:

1. Satisfactory completion of the College's BA or BS requirements.
2. A minimum accumulative grade point average of 2.0 ("C" average) in the major. *Please Note: Students who entered a degree program at UMaine prior to September 1997 may follow a different set of requirements. All questions regarding University or College requirements should be addressed to the College Dean.*
3. Approval of major requirements by the academic department. Double majors and double degrees in closely related disciplines are not permitted.

Bachelor of Arts

In addition to the credits required for the General Education requirements, students must take nine credits of courses numbered 200 or above with at least one course prerequisite ("upper level") in an area outside the academic major. These nine credits may not be presented to satisfy the general education requirements in Human Values and Social Contexts, Mathematics and Science.

Specific Credit Limits:

1. KPE skill courses - 2 credits, maximum allowed.
2. Outside major - 72 credits minimum.
3. ROTC - 9 credits, maximum allowed, Junior/Senior level (numbered 300 or 400) only.

COLLEGE OF LIBERAL ARTS AND SCIENCES NOTES:

Academic Advising:

The College of Liberal Arts and Sciences is committed to fostering and maintaining a positive relationship between students and faculty. To help achieve this goal, all new

students will be assigned to a faculty academic advisor in the discipline in which they intend to major. Students who do not list an "intended major" on their admission application will be assigned to a faculty advisor in any one of the disciplines in the College; once they focus on an intended major, they must request advisor reassignment.

Declaring the Academic Major:

Students in the College of Liberal Arts and Sciences are encouraged to explore a wide variety of academic options before declaring a major. Students must declare an academic major when they have accumulated 53 degree credits but may declare a major at any time prior to that. If a student has accumulated 53 credits and is still undeclared, the College will send a "declaration of major" form along with appropriate instructions. Students should note that admission into the College does not guarantee acceptance into any particular major. For information on admission to a specific major, please read carefully the area of this catalog for that major.

Changing Colleges:

The College normally accepts all current University of Maine students from other baccalaureate programs who have a 2.0 accumulative grade point average and are in good academic standing on the effective date of transfer. However, eligibility for any particular major is determined by the department in which the major resides (see paragraph above). Thus, a student may be admitted into the College, but not necessarily into his or her first choice major.

In unusual circumstances, students who have less than a 2.0 accumulative grade point average may be allowed to change colleges. Students who find themselves in this situation should discuss their request for change with the college associate dean.

Foreign Language Requirements:

Many departments that offer the BA degree have special language requirements or recommendations for BA 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 or American Sign Language (ASL).

- ART: Intermediate level French or German is required for students who major in Art History
- ENGLISH: Proficiency at the intermediate level
- HISTORY: Proficiency at the intermediate level is required in one option
- INTERNATIONAL AFFAIRS: At least one year of a foreign language beyond the intermediate level
- JOURNALISM: six credits from French, German, Spanish or other foreign language
- MASS COMMUNICATION: six credits from French, German, Spanish or other foreign language
- 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 BA degree, two years for those going on to graduate study
- THEATER: Intermediate level proficiency in a foreign language

Students in some majors who have presented two years of a high school foreign language for admission may not register for an elementary course in that particular language for credit unless five years have passed between high school graduation and admission to a college or university. Please consult your major department or college regarding their specific language requirement policies. It is recommended that these students take:

1. An intermediate or advanced course in the language studied in high school (credits earned in those courses count towards the upper-level course credits in the humanities category), or
2. An elementary course in a new language.

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.

Foreign Language competency credit examinations in French, German, Latin, and Spanish are offered.

Credit by competency examination can be achieved as follows:

1. If the score on the examination is sufficiently high, the student will receive three credits 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 credits 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 FRE 211. The student would then have the choice of taking FRE 212, or skipping FRE 212 and taking FRE 305 and FRE 209, or an advanced course. A student who completes two three-credit French courses above the intermediate level with a grade of B or better will receive an additional three credits equivalent to FRE 212. STUDENTS TAKING FRE 211 OR 212 FOR CREDIT CANNOT RECEIVE CREDIT FOR THESE COURSES BY EXAMINATION.
3. The student who scores extremely high will receive six credits 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.

Please consult the department for details.

The Modern Languages and Classics Department accepts Advanced Placement Examinations in Foreign Languages and Literature for degree credit. See the Advanced Placement Credit table. Refer to the index for page number.

Students who did not have two years of the same language in high school are admitted to a BA degree program on a "CONDITIONAL" status. They should check with the Dean's Office regarding options for removing this "CONDITIONAL" status. Students are expected to make up this deficiency during their first year at the University of Maine.

The Five-Year Liberal Arts and Sciences/MBA Combined Program:

Under the combined Five-Year Liberal Arts and Sciences/Master of Business Administration Program, a student can complete his or her undergraduate liberal arts degree at the University of Maine with any major in the College of Liberal Arts and Sciences plus eight or nine selected courses in business and economics. Students may then go on to earn a Master of Business Administration degree with one additional calendar year of graduate study in the Maine Business School. Arts organizations, scientific research facilities, historical and cultural foundations, museums, publishers, and corporations in the entertainment sector, among others, all need trained people for management positions. This combined five-year degree opens many such opportunities. For further information, contact the associate dean.

Black Studies:

Courses are designed to cover selected topics in Black Studies, especially the African American Experience, from African origins to the present day. They will provide students with an introduction to key issues and themes

of Black culture in the Americas, North and South, Africa and Europe, as well as events of African American history. These courses prepare students for intensive study of the Black experience, as well as for effective participation in a diverse society.

Franco-American Studies:

Franco-American Studies is an interdisciplinary program that explores the French cultures of the United States. Its emphasis is on the people of Franco American heritage in Maine and the Northeast region, but it recognizes that cultural patterns do not stop at national borders.

The primary goal of Franco American studies is to broaden the canon of knowledge on Franco American peoples, culture, and literature. The program encourages and facilitates faculty engagement, undergraduate exploration, and community research.

Franco American Studies also has a deep commitment to education. It seeks to prepare students to reflect upon and understand their world. Combining different disciplinary offerings with interdisciplinary core courses, it encourages students to investigate the historical, political, social, and cultural forces that have shaped the Franco American community and, by extension, other distinct racial and ethnic communities throughout the United States. Franco American Studies encourages an awareness and understanding of cultural difference, a necessary knowledge in today's increasingly global society.

For more information, contact the Franco American Studies office in 213 Little Hall at (207) 581-3791.

The Intensive English Institute:

The Intensive English Institute (IEI) of the University of Maine is part of the College of Liberal Arts and Sciences. Its primary emphasis is on preparing international students and non-native speakers of English for university study at UMaine and other American universities and colleges, or for professional activities where English is the medium of communication. Intensive English is offered year round. Three-week conversation and culture courses are offered in the winter and summer. Contract courses are also offered. In addition to a full-time course of study, the IEI offers academic advising, cross-cultural counseling, tutorials and self-study opportunities in a variety of content and skill areas. The Institute administers the TOEFL every semester. Students may also participate in the Conversation Partners Program. The IEI endorses the TESOL Standards for Postsecondary Programs and the NAFSA Principles of International Educational Exchange, and has met the standards of the American Association of Intensive English Programs (AAIEP) and the University and College Intensive English Programs (UCIEP). It is a member of NAFSA, TESOL, AAIEP, and UCIEP.

The IEI provides specialized language training programs upon request for institutions and organizations, particularly in the area of Pre-Academic Skills, Teacher Training in English as a Second/Foreign Language, and American Studies.

The IEI is committed to quality of instruction and service in its programs.

Our curriculum consists of six full-time levels from beginning to advanced. Students are tested and placed into the appropriate level of instruction. Full-time study consists of classes totaling twenty credits per week. The four communication skills are addressed in integrated classes of Writing and Grammar and Oral Communication Skills. Students also choose among Reading and Vocabulary Building, U.S. History and Culture, Business English Studies, TOEFL, English through Film, and English for Academic Purposes. Beginning to intermediate students have additional supervised hours in the Language Lab and high intermediate to advanced students may take Directed Study Skills.

IEI students are charged a set fee for each course. Full-time study consists of four courses. Matriculated students may take a combination of language study courses and degree courses. The IEI accepts both matriculated and non-matriculated students.

The Maine Review:

The Maine Review, an undergraduate literary annual, is edited by students in the Department of English. *Stolen Island Review* is an annual edited and published by graduate students in English.

National Poetry Foundation:

The College of Liberal Arts and Sciences is home to the National Poetry Foundation, an internationally recognized center for fostering the study of modern poetry. It publishes two journals-*Paideuma: A Journal Devoted to Ezra Pound Scholarship* and *Sagetrieb: A Journal Devoted to Poets in the Imagist/Objectivist Tradition*-and books on twentieth-century poets. The National Poetry Foundation maintains close links to the Department of English.

Native American Studies:

Native American Studies aspires to develop a broad scope of understanding for the students at the University of Maine about Native peoples, their traditions and their quest for self-determination. It is designed around the belief that such explorations are the cornerstone of Native American Studies as an academic discipline in its own right, giving voice and credibility to the Native perspective, worldview and life experiences. It offers an interdisciplinary curriculum that explores American Indians in the past and present, supporting the legitimacy of Native American scholarship. It seeks to reinforce knowledge among Native students, while enhancing understanding among non-Native students. The presence of the Wabanaki Tribes within the State of Maine provides a tie to the history, language and vital culture unique to this state and a major focus of study.

Native American Studies maintains high academic standards through the traditional pedagogy of Native communities, as well as Western-based academic standards. It focuses on the connection between the University and Native communities of Maine and surrounding areas, to ensure accuracy and authenticity in course offerings. It also seeks to strengthen the connections between Native and non-Native people on campus, allowing respectful discussion of issues of significance to all.

Persons wishing information concerning Native American Studies may contact the Director of Native American Studies, Dunn Hall, or call (207) 581-4450.

The Writing Center:

The Department of English operates the Writing Center, staffed with peer tutors. Located in 402 Neville Hall, it serves as a resource center for University of Maine students for their academic writing.

Program Contacts

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Women's Studies Program
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Anthropology

Anthropology is the study of human cultures, societies, and behavior in all parts of the world throughout all periods of history. There are four sub-disciplines: archaeology, the study of historic and prehistoric cultures and civilizations; Socio-cultural anthropology, which is concerned with current cultures of all degrees of complexity; physical anthropology, the biological aspects of the human species; and anthropological linguistics, which is concerned with the scientific study of language and its relationship to thought and society. In the past, anthropologists tended to study people in small, tribal societies. In recent decades, more attention has been given to peasantry and industrialized, urban societies and to the application of anthropology to understanding problems of these societies.

The Department of Anthropology focuses on archaeology and socio-cultural anthropology. Training in linguistics may be obtained through the linguistics course concentration. Courses in biological/physical anthropology also are offered from time to time. In addition, the Department offers courses in folklore, oral history, and geography, which are closely related to anthropology.

Departmental Notes:

Graduate Training in Archaeology

The Department of Anthropology cooperates with the Institute for Quaternary Studies and the Department of History to train graduate students in prehistoric and historic archaeology (see History and Quaternary Studies in index). Application is made through these cooperating units. An Individualized Ph.D. in Anthropology is possible under certain circumstances. (See also, Graduate School Catalog).

Career Opportunities

Anthropology provides very broad training in the social sciences. Therefore, a background in Anthropology is useful in any career in which an understanding of people or the societies in which they live is important. Due to the broad nature of the field, students trained in anthropology have followed a wide range of careers. In recent years, our majors have pursued advanced training in anthropology and folklore. They also have gone on to advanced training in law, social work, business, theology, library science, museum work, nursing, computer programming, clinical psychology, education, and the U.S. Armed Forces.

International Affairs in Anthropology majors receive excellent preparation for careers in law, Foreign Service, international development, or business operating in the international arena.

Students with course work and practical experience in archaeology, as well as those with graduate degrees in archaeology, have found employment with public agencies and private organizations concerned with cultural resource management.

Special Resources and Programs

Archaeology faculty focuses on historic and prehistoric North America and prehistoric South America. A number of faculty are jointly appointed with the Canadian-American Center and the Institute for Quaternary Studies. The cultural anthropologists have extensive field experience in the Middle East, Oceania, Latin America, India, and Europe as well as in North America.

Periodically, the anthropology faculty offers field schools in historic and prehistoric archaeology, oral history and folklore, and geography. Students also are encouraged to participate in research programs in New England and the Maritime Provinces currently in progress. In recent years students have been hired to work on archaeology field

nd laboratory projects, in the Maine Folklife Center, the Hudson Museum of Anthropology, and as interviewers and research ssistants for projects in medical anthropology and marine resource management.

The Bachelor of Arts in Anthropology

Students may declare an anthropology major in their first year, and must declare heir major once they have accumulated 53 redits. It is desirable to begin taking nthropology courses in the first semester at he university.

First year students are advised to take NT 101 (fall semester) and ANT 102 spring semester), as these are both required or the major and are prerequisites for many pper division courses. Other 100 and 200 evel courses in anthropology are relevant nd may be taken in the first year. First year tudents also concentrate on completing General Education requirements.

ANT 300 and ANT 317 are both major equirements and should be taken as early as ossible, and normally not in the senior year. The capstone course, ANT 492, is taken in he senior year.

Requirements for Anthropology Majors

A minimum of 37 credits of anthropology r geography is required. In some cases, louble majors may be able to apply six redits of collateral courses to the major. Majors must pass the following courses with t least a "C-" grade:

NT 101 - Introduction to Anthropology: Human Origins and Prehistory	3
NT 102 - Introduction to Anthropology: Diversity of Cultures	3
NT 300 - Basic Theory in Cultural Anthropology	3
NT 317 - Fundamentals of Archaeology	3
NT 492 - Capstone in Anthropology	1

ANT 300, 317, the Capstone courses, and other credits must be taken at UMaine.

Because ANT 300 and ANT 317 are prerequisite to some advanced level courses, tudents should take them as early in their program as possible. Note: senior majors normally may not take ANT 300 and ANT 317. Students writing an honors thesis do not ave to take the capstone course, ANT 492.

Advanced study in anthropology normally equires use of quantitative methods and oreign language competency, and some heoretical sophistication. Consequently, tudents planning to do graduate work in nthropology should take a course in tatistics such as ANT 462 (Numerical Methods in Anthropology), and achieve oreign language competency at the ntermediate level. A knowledge of statistics and one or more foreign languages in required in most Ph.D. programs in Anthropology. Those interested in graduate work in archaeology should take some 500 level courses in Anthropology.

Transfer students who have not taken ANT 300 (Basic Theory in Cultural Anthropology) will have to submit a paper to fulfill the Writing Intensive requirement. Students who have problems with their written work in the ANT 300 course will be required to take remedial work in written English.

The anthropology major emphasizes a broadly based undergraduate curriculum. In consultation with his or her advisor, the student should select courses to sample effectively the sub-disciplines of anthropology, and avoid over-specialization at the B.A. level. A few interdisciplinary course concentrations or minors are appropriate for the anthropology major. These are included under the College of Liberal Arts and Sciences.

Art Education

The Department of Art offers the Bachelor of Arts degree in Art Education, which provides a liberal arts program of study while preparing students as teachers of the visual arts. Completion of this NCATE approved program leads to certification as an art teaching specialist in the State of Maine, grades K-12, as well as preparing students for employment in a variety of community-based sites where formalized art instruction occurs. Many students go on to further study at the Graduate Level.

The BA in Art Education includes coursework in the social and behavioral sciences, arts and humanities, natural sciences and mathematics as well as in focus areas of the visual arts and education. Study in the visual arts includes 33 credits of art studio (24 in required courses, 9 in studio electives); 21 credits of art history (9 in required courses, 12 in art history electives); and 18 credits in art education (required). In addition, students are required to complete 24 credits of professional education coursework and practicum experience. In order to complete the 125 credits required for graduation, art education students may need to take 6 - 9 credits of coursework as an overload (over 15 credits per semester) or during summer sessions. Students completing the BA in Art Education also receive minors in Studio Art and Art History.

Options in Art Education:

Art education is a field of research, study, and practice, which has expanded beyond public school art teaching. Undergraduate study in art education not only prepares a student for teaching certification, but also for graduate work in specialized areas of art education and related fields of study. Some art education majors choose careers in museum education, art therapy, community arts education, arts administration, or other fields, which involve working closely with people and art. The Department of Art offers students an opportunity to concentrate in developmental disabilities through enrollment in the Developmental Disabilities Interdisciplinary Concentration in affiliation with the Behavioral and Developmental Pediatrics Center at Eastern Maine Medical Center and its cooperating agencies. (See the University Affiliated Program in the Index.)

Students working toward degrees in studio art and art history who wish to prepare for certification as an art teaching specialist in the State of Maine may fulfill the requirements for teacher certification by completing required studio, art history, art education, and professional education courses, including the student teaching practicum.

Suggested curriculum for the B.A. in Art Education

First Year - First Semester	
ARH 155 - Art History I	3
or ARH 156 - Art History II	3
ART 100 - Drawing I	3
ART 110 - 2-D Design	3
or ART 120 - 3-D Design	3
ENG 101 - College Composition	3
or PSY 100 General Psychology	
PSY 100 - General Psychology	3
or ENG 101 College Composition	
General Education Requirement	3
First Year - Second Semester	
ARH 155 - Art History I	3
or ARH 156 - Art History II	3
ART 110 - 2-D Design	3
or ART 120 - 3-D Design	3
ART 200 - Drawing II	3
ENG 101 - College Composition	3
or PSY 100 - General Psychology	3
General Education Requirement	3
Second Year - First Semester	
EDB 202 - Schools, Students, and Society	3
EDB 221 - Educational Psychology	3
ART 200-level Studio Art courses	6
ARH 200-level Art History course	3
Second Year - Second Semester	
AED 270 - Introduction to Visual Culture and Learning	3
ART 200-level Studio Art courses	6

ARH 200-level Art History course	3
General Education Requirement	3
Third Year - First Semester	
AED 371 - Methods and Materials in Art Education	3
AED 372 - Foundations of Art Education	3
AED 373 - Introduction to Curriculum	3
ART 300-level Studio Art courses	6
ARH 300-level Art History course	3
Third Year - Second Semester	
AED 473 - Advanced Curriculum in Art Education	3
AED 474 - Topics in Art Education	3
ARH 351 - Art Theory and Criticism	3
ART 300-400 level Studio Art course	3
General Education or B.A.Degree Requirement	3-4
Fourth Year - First Semester	
SED 402 - Adapting Instruction for Students with Disabilities	3
ART 300-400-level Studio Art course	3
ARH 300-400-level Art History course	3
General Education Requirements	6-7
Fourth Year - Second Semester	
STT 494 - Student Teaching K-12 (Art or Music)	1-12
Students should register for 12 credits.	
Summer Session or Overload	
General Education Requirements	6-9

Art History

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

In addition to courses in Art History, 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 must take two modern language courses, to broaden their research capabilities in the field.

With its focus upon critical thinking in verbal and non-verbal forms of cognition, the Art History course of study prepares students for many options including continued study at the graduate level. It readies students for careers in museums, art galleries, arts administration, antiquities, communications, arts libraries, and arts criticism.

Suggested curriculum for the B.A. in Art History

First Year - First Semester	
ARH 155 - Art History I	3
Foreign Language	3
General Education Requirements	6
Elective	3
First Year - Second Semester	
ARH 156 - Art History II	3
Foreign Language	3
General Education Requirements	6
Elective	3
Second Year - First Semester	
ARH 200's Classical, Northern, Enlightenment, or Modern	3
ART 100's Studio Art requirement	3
General Education Requirements	6-7
Elective	3
Second Year - Second Semester	
ARH 200's Classical, Northern, Enlightenment, or Modern	6
ART 100's Studio Art requirement	3
General Education Requirements	4
Elective	3
Third Year - First Semester	
ARH 200's Classical, Northern, Enlightenment, or Modern	3
ARH 300's Classical, Northern, Enlightenment, or Modern	3
Electives	9
Third Year - Second Semester	
ARH 300's Classical, Northern, Enlightenment, or Modern	3
ARH 300's Any 300 level seminar	3
Electives	9
Fourth Year - First Semester	
ARH 352 - Critical Methods in History of Art	3
ARH 300's Any 300 level ARH Seminar	3
Electives	9
Fourth Year - Second Semester	
ARH 351 - Art Theory and Criticism	3
ARH 400's Any 400 level ARH Seminar	3
Electives	9

Chemistry

Chemistry encompasses the study of all matter at the molecular level: from the basic structure of materials to techniques for synthesizing new drugs; from an understanding of chemical bonding to the control of the properties of advanced materials for specific applications.

The Department is committed to providing its students with instruction in the most modern practice of chemistry through ongoing curriculum development. The Department provides preparation for careers in the chemical industry and high school teaching, for medical and other professional schools, and for graduate work in chemistry. Undergraduate research provides majors with a close working relationship with one or more faculty members and their research groups.

ACADEMIC PROGRAMS:

The Department of Chemistry offers programs of study leading to the degrees of Bachelor of Arts and Bachelor of Science in Chemistry in the College of Liberal Arts and Sciences.

Because knowledge of chemistry is fundamental to success in so many fields, the chemistry curriculum offers an unusual opportunity for a wide choice of electives so that the chemistry major may adapt his or her program to individual interests or needs. Such individualized programs include preparation for medical school or other health professions, technical writing, industrial management, or computer applications. More information regarding individual program planning is available from the chair of the Department. The academic programs offered by the Department are described below:

BS Degree in Chemistry

The Department of Chemistry offers two BS degrees in chemistry. Sample schedules and curricula for each degree option are available in the Department of Chemistry office.

ACS Certified BS Degree

The American Chemical Society certified B.S. degree in chemistry prepares the student for employment in the chemical industry or for graduate studies in chemistry or a related field. Students must take a minimum of 50 credits of course work in chemistry. The following courses are required for the ACS certified degree:

CHY 121 - Introduction to Chemistry	3
CHY 122 - The Molecular Basis of Chemical Change	3
CHY 124 - The Molecular Basis of Chemical Change Laboratory	1
CHY 242 - Principles of Quantitative Analysis and Solution Equilibria	5
CHY 251 - Organic Chemistry I	3
CHY 252 - Organic Chemistry II	3
CHY 253 - Organic Chemistry Laboratory I	2
CHY 254 - Organic Chemistry Laboratory II	2
CHY 371 - Physical Chemistry I	3
CHY 393 - Undergraduate Seminar in Chemistry	3
CHY 398 - Undergraduate Research (must be taken a minimum of 2 semesters)	1
CHY 431 - Structure and Mechanism in Biological Chemistry	3
CHY 461 - Advanced Inorganic Chemistry I	3
CHY 475 - Physical Chemistry III	3
CHY 491 - Advanced Integrated Laboratory I	3

Plus a choice of at least two of the following:

CHY 372 - Physical Chemistry II	3
CHY 443 - Instrumental Analysis	3
CHY 453 - Intermediate Organic Chemistry Laboratory	4
CHY 462 - Organometallic Chemistry	3
CHY 492 - Advanced Integrated Laboratory II	3

Additional requirements include MAT 126, 127, 228, 258, PHY 111/PHY 112 or PHY 121/PHY 122, 3 credits of speech communication, and one course in computer programming. General education courses and electives must be chosen to satisfy the university-wide and college requirements for the B.S. degree.

Non-certified BS Degree

This degree option is excellent for students considering pre-medical, pre-veterinary, or double majors. The non-certified B.S. allows students additional flexibility in their programs so that they may choose suitable electives to prepare for medical, veterinary, and other health professional schools, work in environmental testing and remediation, or work in the pharmaceutical industry. Students also have the option of taking business, law, computer science, materials science, or other courses to complement their chemistry curriculum. This option also is excellent for students who want to earn a double major. Students must take a minimum of 41 credits of course work in chemistry. The following courses are required for the non-certified B.S. degree:

CHY 121 - Introduction to Chemistry	3
CHY 122 - The Molecular Basis of Chemical Change	3
CHY 124 - The Molecular Basis of Chemical Change Laboratory	1
CHY 242 - Principles of Quantitative Analysis and Solution Equilibria	5
CHY 251 - Organic Chemistry I	3
CHY 252 - Organic Chemistry II	3
CHY 253 - Organic Chemistry Laboratory I	2
CHY 254 - Organic Chemistry Laboratory II	2
CHY 371 - Physical Chemistry I	3
CHY 393 - Undergraduate Seminar in Chemistry	3
CHY 398 - Undergraduate Research (must take a minimum of 2 semesters)	1
CHY 399 - Undergraduate Thesis	1-3
CHY 431 - Structure and Mechanism in Biological Chemistry	3
CHY 461 - Advanced Inorganic Chemistry I	3
CHY 491 - Advanced Integrated Laboratory I	3

Additional requirements include MAT 126, 127, 228, PHY 111/PHY 112 or PHY 121/PHY 122, 3 credits of speech communication, and one course in computer programming. General education courses and electives must be chosen to satisfy the university-wide and college requirements for the BS degree.

BA Degree in Chemistry

The BA degree in chemistry prepares students for careers in which chemistry and physical science play a significant role. With appropriate electives, students can go on to jobs in a variety of fields including teaching of science in middle school or high school. Students must take a minimum of 36 credits of course work in chemistry. The following courses are required for the BA degree:

CHY 121 - Introduction to Chemistry	3
CHY 122 - The Molecular Basis of Chemical Change	3
CHY 124 - The Molecular Basis of Chemical Change Laboratory	1
CHY 242 - Principles of Quantitative Analysis and Solution Equilibria	5
CHY 251 - Organic Chemistry I	3
CHY 253 - Organic Chemistry Laboratory I	2
CHY 371 - Physical Chemistry I	3
CHY 393 - Undergraduate Seminar in Chemistry	3
CHY 398 - Undergraduate Research (must take a minimum of 2 semesters)	1
CHY 399 - Undergraduate Thesis	1-3
CHY 461 - Advanced Inorganic Chemistry I	3

Additional requirements include MAT 126, 127, 228, PHY 111/PHY 112 or PHY 121/PHY 122, 3 credits of speech communication, and one course in computer programming. General education courses and electives must be chosen to satisfy the university-wide and college requirements for the BA degree.

Health Professions

The chemistry curriculum is strong preparation for further study in medicine and other health related fields. To meet the requirements of most health professional schools, the following courses are recommended: BIO 100 , BIO 200, SOC 101, PSY 100. Additional courses including BIO 377/ BIO 378 , BIO 462, BMB 322/BMB 323 and BMB 400 also provide good preparation for these programs. A health professions concentration has been developed and a suggested curriculum is available in the Chemistry Department office.

Science Teaching Certification

There is dramatic need for well-qualified science teachers in both high schools and middle schools. The B.A. in chemistry can be combined with a number of avenues for obtaining state certification as a secondary school science teacher. Students interested in this program should contact the Chemistry Department office for more information.

Other Areas of Focus

The chemistry curriculum provides a flexible grounding for areas of focus in materials science, wood chemistry, and computational chemistry to name a few. Other minors could include business for a career in management within the chemical industry or journalism for careers in technical and science writing. More detailed information is available in the Chemistry office.

Cooperative Work Experience

A program is available which allows students to accept opportunities for temporary employment provided by cooperating industries. The student may work during the summer or part of one summer and either the preceding or following semester. Credit will be allowed for this work under course numbers CHY 394 and CHY 594. This is a supervised and paid professional experience.

Five-Year Combined B.S.-M.S. Program

Selected students may apply for this option, which permits completion of both

the B.S. and M.S. degree in five years. Work completed as part of the Honors program may be included. Application should be made by letter to the Department early in the junior year.

Transfer Students

Transfer students are welcomed in the Department. For a UMaine Chemistry degree, students must take 14 hours of upper level Chemistry at the University of Maine. Half the credits for a minor in Chemistry must be taken at the University of Maine.

Graduate Work In Chemistry

The Department of Chemistry offers a program of study and research leading to the M.S. and Ph.D. degrees. The general requirements of these programs are described in the Graduate School catalog.

Communication

The department of Communication and Journalism offers three different BA degrees. These degrees are in: Communication, Mass Communication and Journalism. The department also offers minors in Communication and in Public Relations. Humans possess a "mighty genius of construction" (Nietzsche) for using communication to produce cultures, institutions, and even our sense of self. The study of communication asks how we do this, how our basic ability to communicate allows us to weave a powerful web between and within individuals, cultures and organizations. Students pursue such questions as these: How do we use the power of language within personal relationships? How do the stories we tell in conversation provide meaning and significance to the identities we fashion for ourselves, or cultures? What communication practices do we engage in to maintain and build organizations? What rhetorical strategies do we employ to spin new social webs or tear down old ones? How do technologies extend and alter our abilities and practices? By engaging these questions students understand and critically evaluate human communication in their lives and in their careers.

Majors in Communication must complete a minimum of thirty six (36) credits in Communication courses and a total of nine credits in the areas of Statistics and Computer Science, Writing, or Language and Critical Thinking (list of acceptable courses available in 420 Dunn). The nine credits must come from two of the three areas with at least three credits in each of the two as are elected. Students taking department courses to satisfy requirements within the Communication major must have a C- or better in each course.

Requirements for Communication Majors

1. Each of the following core courses is required (9 credits)
   - CMJ 201 - Communication Studies I 3
   - CMJ 202 - Communication Studies II 3
   - CMJ 401 - Speech, Space, Event: Critical Applications 3
   - *or* CMJ 402 - Communication Research 3
2. At least 27 credits from the following courses, 12 credits of which must be at the 400 level:
   - CMJ 102 - Fundamentals of Interpersonal Communication 3
   - *or* CMJ 103 - Fundamentals of Public Communication 3
   - *or* CMJ 106 - Oral Communication of Literature 3
   - CMJ 257 - Business and Professional Communication 3
   - CMJ 324 - Interpersonal Communication in Everyday Life 3
   - CMJ 345 - Small Group Communication 3
   - CMJ 347 - Argument and Critical Thinking 3
   - CMJ 360 - Nonverbal Communication 3
   - CMJ 366 - Speech Play and Performance 3
   - CMJ 367 - Public Relations 3
   - CMJ 401 - Speech, Space, Event: Critical Applications 3
   - *or* CMJ 402 - Communication Research 3
   - (if not used to meet a core requirement)
   - CMJ 403 - Persuasion and Social Influence 3
   - CMJ 405 - Women and Communication 3
   - CMJ 410 - Social Influence of Mass Communication 3
   - CMJ 420 - Health Communication 3
   - CMJ 444 - Political Rhetoric 3
   - CMJ 450 - Communication and Technology 3
   - CMJ 466 - Narrative and Communication 3
   - CMJ 470 - Communication in Organizations 3
   - CMJ 493 - Topics in Communication 1-3

Electives

Students MAY take additional credits in department courses beyond the requirements for a major. In addition to the courses listed above, students may select:

CMJ 492 - Directed Independent Study 1-3
CMJ 495 - Internship 1-3

Suggested curriculum for the B.A. in Communication

First Year - First Semester
CMJ 102 - Fundamentals of Interpersonal Communication 3
or CMJ 103 - Fundamentals of Public Communication 3
or CMJ 106 - Oral Communication of Literature 3
ENG 101 - College Composition 3
General Education Human Values/Social Context. 6
General Education Science or Mathematics/Statistics 3

First Year - Second Semester
CMJ 201 - Communication Studies I 3
General Education: Human Values/Social Context 9
General Education: Science or Mathematics/Statistics 3

Second Year - First Semester
CMJ 202 - Communication Studies II 3
General Education Science or Mathematics/Statistics 3
Electives 9

Second Year - Second Semester
CMJ 2xx or 3xx requirement 3
CMJ 3xx requirement 3
CMJ External Requirement 3
B.A. Upper Level Requirement 3
Electives 3

Third Year - First Semester
CMJ 3xx requirement 3
CMJ 3xx or 4xx requirement 3
CMJ External Requirement 3
General Education Ethics 3
B.A. Upper Level Requirement 3

Third Year - Second Semester
CMJ 4xx requirement 3
CMJ 3xx or 4xx requirement 3
CMJ External Requirement 3
B.A. Upper Level Requirement 3
Elective 3

Fourth Year - First Semester
CMJ 401 - Speech, Space, Event: Critical Applications 3
or CMJ 402 - Communication Research 3
CMJ 4xx requirement 3
Electives 9

Fourth Year - Second Semester
CMJ 4xx requirement 3
CMJ 4xx requirement 3
Electives 9

Communication Sciences and Disorders

The study of Communication Sciences and Disorders involves the examination of human communication, its development and disorders. The ability to communicate may be our most distinctive characteristic as a species. Human communication is essential to learning, work and social interaction. Communication disorders affect the way people talk and understand. These disorders range from simple sound substitutions to total impairment of the ability to use language. Impaired communication can affect every aspect of a person's life. Students who study communication sciences acquire a broad general background relevant to careers or graduate study in such fields as speech-language pathology, audiology, education, and health care.

The undergraduate program in Communication Sciences and Disorders at the University of Maine provides a general education in speech, language, and hearing sciences. In addition it prepares students for graduate study in a variety of fields and equips majors with pre-professional competencies that should enable them to undertake master's study recommended for entrance to the professions of speech-language pathology and audiology. The Master's program in Communication Sciences and Disorders at the University of Maine is accredited by the American Speech-Language-Hearing Association.

The Bachelor of Arts in Communication Sciences and Disorders

Majors must complete three credits in mathematics or statistics, three credits in the biological/physical sciences, six credits in the behavioral and/or social sciences, fifteen credits in basic normal communication processes and nine credits in non-departmental cognate areas including PSY 100. A list of acceptable courses is available from the Department. Students taking department courses to satisfy requirements within the Communication Sciences and Disorders major must have a C (2.0) or better in each course.

Students also are required to complete nine semester credits in the following areas (at least one course in two of the three areas):

- Statistics and computer science,
- Writing, and
- Language and critical thinking

These nine credits help students develop useful tools for studying communication behaviors. A list of specific courses that may be used to satisfy this requirement is available at the department office in Dunn Hall, Room 336.

All students in Communication Sciences and Disorders are expected to take advantage of the laboratory and service opportunities provided through the department's scientific laboratories as well as through the Conley Speech and Hearing Center. The scientific laboratories provide opportunities for research under faculty supervision, and the Conley Speech and Hearing Center provides training opportunities for those preparing for careers as speech-language clinicians and provides services for persons who are speech, language, or hearing impaired.

Required Courses for Students in Communication Sciences and Disorders Program

CSD 130 - Introduction to Communication Sciences and Disorders	3
CSD 291 - Introduction to Scholarship and Inquiry in Communication Sciences and Disorders	1
CSD 301 - Introduction to Clinical Audiology	3
CSD 380 - Language Development	3
CSD 383 - Anatomy and Physiologyof the Speech Mechanism	3
CSD 481 - Phonological Development and Phonetics	4
CSD 484 - Introduction to Speech Science	3
CSD 487 - Disorders of Speech and Language	3
CSD 490 - Senior Capstone: The Clinical Process I	4
CSD 491 - Senior Capstone: The Clinical Process II	4
INT 410 - (ANT, ENG, MLC) Introduction to the Study of Linguistics	3
PSY 100 - General Psychology	3

The courses meeting the 15 credits in basic human communication processes are: CSD 380, CSD 383, CSD 481, CSD 484 and INT 410.

Computer Science

The Department of Computer Science offers programs of study leading to the Bachelor of Arts in Computer Science and the Bachelor of Science in Computer Science. Both programs prepare students to become effective computer professionals. Upon graduation the student is ready for an entry-level position in industry and for graduate study. The required course work in computer science provides the student with an understanding of the basic areas of computer science: structure of programming languages, operating systems, systems analysis/software engineering, algorithms and data structures, computer architecture, and the theory of computer science.

Departmental Requirements:

At least 18 credits of computer science courses numbered 300 or above must be Orono courses. Required major GPA: 2.00

Field Experience Option (Capstone Experience requirement)

To provide students with an introduction to the professional environment of computer science, selected qualified students may elect a field experience following completion of the junior level course work. Students are placed in computing environments that utilize both their computer science education and course work in their concentration. Students are normally paid while on field experience and receive academic credit after completion of a written report and oral presentation to interested faculty, staff and students. Applicants will be screened by a committee within the department and students will be chosen for field experiences that match their credentials with employer requirements. Students who successfully complete field experience will have the location of their field experience noted on their transcript. Completion of COS 495 satisfies the General Education Capstone Experience requirement.

Students interested in field experience normally apply for consideration during the spring semester of their junior year. Before final acceptance in COS 495 and placement, a student normally must complete COS 301, COS 420, COS 431 and preferably COS 350 with at least a grade of "C" in each of these courses, and permission.

Students may elect an extended field experience that usually goes from January through August or June through December. A student would typically register for COS 495, 2 credits during the summer and 1 credit for spring or fall. This usually requires postponing graduation by one semester.

The Bachelor of Arts in Computer Science

Students must complete course work in computer science and course work in an approved minor. The courses submitted to meet the requirements for the minor must include at least 18 credits of courses outside of Computer Science. Students completing a second or double major are not required to complete a minor. All students must satisfy the general requirements of University and the requirements of the B.A. degree. All required courses must be taken for a grade; courses taken PASS/FAIL will not count.

Required courses for the B.A. in Computer Science. At least 40 credits required.

COS 203 - Programming in COBOL 1
or COS 204 - Programming in FORTRAN 1
COS 220 - Introduction to Computer Science I 3
COS 221 - Introduction to Computer Science II 3
COS 230 - Computer Architecture and Assembly Language 3
COS 250 - Discrete Structures 3
COS 301 - Programming Languages 3
COS 350 - Data Structures and Algorithms 3
COS 420 - Introduction to Software Engineering 3
COS 431 - Operating Systems 3
COS 495 - Field Experience 1-3
or COS 499 - Senior Project 3

Note: A student must complete COS 220 and COS 221 with a grade of "C" or better in each; a grade of "C-" is not sufficient.

Four additional courses from:
COS 398 - Topics in Computer Science 1-3
COS 4xx 3
COS 5xx 3

Required Fundamental Courses

CMJ 103 - Fundamentals of Public Communication 3
ECO 120 - Principles of Microeconomics 3
ECO 121 - Principles of Macroeconomics 3
ENG 101 - College Composition 3
ENG 317 - Business and Technical Writing 3
MAT 115 - Applied Mathematics for Business and Economics 3
or MAT 127 Calculus II. 3
MAT 126 - Calculus I 4
MAT 215 - Introduction to Statistics for Business and Economics 3
or MAT 434 - Introduction to Statistics 4

Note: A student must complete MAT 126, MAT 127 or MAT 115; and ENG 101 with a grade of "C" or better in each; a grade of "C-" is not sufficient.

Suggested curriculum for the B.A. in Computer Science

COS 100, or at minimum COS 101, is recommended for students not familiar with personal computers. Students with little experience programming should take COS 120 in the fall instead of COS 220. Students with questions should check with their advisors. Credits for these courses do not apply to the major. This is only one model. Students may adjust the sequence of courses to meet their own situations.

First Year - First Semester
COS 220 - Introduction to Computer Science I 3
ECO 120 - Principles of Microeconomics 3
ENG 101 - College Composition 3
or CMJ 103 Fundamentals of Public Communication. 3
LAS 100 - Majoring in the Liberal Arts and Sciences 1
MAT 126 - Calculus I 4

First Year - Second Semester
CMJ 103 - Fundamentals of Public Communication 3
or ENG 101 College Composition. 3
COS 221 - Introduction to Computer Science II 3
ECO 121 - Principles of Macroeconomics 3
MAT 115 - Applied Mathematics for Business and Economics 3
or MAT 127 Calculus II 3
Elective 3

Second Year - First Semester
COS 230 - Computer Architecture and Assembly Language 3
Minor/Electives 12

Second Year - Second Semester
COS 250 - Discrete Structures 3
MAT 215 - Introduction to Statistics for Business and Economics 3
or MAT 434 - Introduction to Statistics 4
Minor/Electives 9

Third Year - First Semester
COS 301 - Programming Languages 3
COS 431 - Operating Systems 3
Minor/Electives 9

Third Year - Second Semester
COS 203 - Programming in COBOL 1
or COS 204 - Programming in FORTRAN 1
COS 350 - Data Structures and Algorithms 3
COS 420 - Introduction to Software Engineering 3
Electives 9

Summer
COS 495 - Field Experience 1-3 (if selected)

Fourth Year - First Semester
COS Electives 6
Minor/Electives 9

Fourth Year - Second Semester
COS 490 - Computers, Ethics and Society 3
COS Electives 6
Electives 6

The Bachelor of Science in Computer Science

The Computer Science Accreditation Commission (CSAS) of the Computing Sciences Accreditation Board (CSAB) accredits the B.S. Computer Science Program, a specialized accrediting body recognized by the Commission on Recognition of Postsecondary Accreditation (CORPA). This degree complements the B.A. in Computer Science degree with a degree, which requires its recipients to demonstrate more scientific and technical expertise while allowing the student more freedom in meeting general education requirements. All requirements of the College of Liberal Arts and Sciences must be met. All required courses must be taken for a grade; courses taken Pass/Fail will not count.

Required Computer Science Courses (43 credits)

COS 204 - Programming in FORTRAN 1
COS 220 - Introduction to Computer Science I 3
COS 221 - Introduction to Computer Science II 3
COS 230 - Computer Architecture and Assembly Language 3
COS 250 - Discrete Structures 3
COS 301 - Programming Languages 3
COS 335 - Computer Organization and Architecture 3
COS 350 - Data Structures and Algorithms 3
COS 420 - Introduction to Software Engineering 3
COS 431 - Operating Systems 3
COS 490 - Computers, Ethics and Society 3
COS 495 - Field Experience 1-3
or COS 499 - Senior Project 3

Note: A student must complete COS 220 and COS 221 with a grade of "C" or better in each; a grade of "C-" is not sufficient.

COS xxx Elective courses (three courses from COS 398, COS 4xx, and COS 5xx)

Required Mathematics Courses (19 credits)

MAT 126 - Calculus I 4
MAT 127 - Calculus II 4
MAT 228 - Calculus III 4
MAT 262 - Linear Algebra 3
MAT 434 - Introduction to Statistics 4

Note: A student must complete MAT 126 and MAT 127 with a grade of "C" or better in each; a grade of "C-" is not sufficient.

Other Required courses (24 credits)
CMJ 103 - Fundamentals of Public Communication 3
ECE 171 - Microcomputer Architecture and Applications 4
ECE 275 - Sequential Logic Systems 3
ECE 471 - Microprocessor Applications Engineering 3
ECE 477 - Hardware Applications Using C 3
ENG 101 - College Composition 3
ENG 317 - Business and Technical Writing 3
PHY 121 - Physics for Engineers and Physical Scientists I 4
PHY 122 - Physics for Engineers and Physical Scientists II 4

Note: A student must complete ENG 101 and ENG 317 with a grade of "C" or

better in each; a grade of "C-" is not sufficient.

Requirements on Electives:

A total of 24 additional credits of electives must be chosen from the (broadly construed) areas of the Arts and Humanities, and Social Sciences (at least 6 credits in each area and at least 6 credits in upper level courses). These electives must be taken from the disciplines listed below. The University requires 18 of these credits to be in the area of Human Values and Social Context with six specific sub-categories defined. Lists of courses meeting this requirement are available from your advisor. The above requirements are overlapping and courses may be chosen to satisfy several requirements at once.

Social and Behavioral Science: Anthropology, International Affairs - Anthropology, Communication Disorders, Communication, Economics, International Affairs - Economics, Journalism, Mass Communication, Political Science, International Affairs - Political Science, Psychology, Sociology.

Arts and Humanities: Art, English, French, German, History, International Affairs, Foreign Languages, International Affairs, History, Latin, Modern Languages, Music, Philosophy, Romance Languages, Spanish, Theatre.

Two additional courses (6-8 credits) emphasizing quantitative methods must be taken. Current courses meeting this requirement are: AST 109, 110, 215, 216, BMB 207, 208, BIO 100, 201, 202, 204, 208, 280, CHY 121 and 123, CHY 132 and 124/134, GES 101, 102, 103, 140, 314, PHY 236 and 229, PHY 238 and 230, PHY 4xx, SMS 370.

Suggested curriculum for the B.S. in Computer Science

COS 100 is recommended for students not familiar with personal computers. Students with little experience programming should take COS 120. Credit for COS 100 and COS 120 does not apply to the major. This is only one model. Students may adjust the sequence of courses to meet their own situations.

First Year - First Semester

COS 220 - Introduction to Computer Science I	3
ENG 101 - College Composition	3
or CMJ 103 - Fundamentals of Public Communication.	3
LAS 100 - Majoring in the Liberal Arts and Sciences	1
MAT 126 - Calculus I	4
PHY 121 - Physics for Engineers and Physical Scientists I	4

First Year - Second Semester

COS 221 - Introduction to Computer Science II	3
ECE 171 - Microcomputer Architecture and Applications	4
MAT 127 - Calculus II	4
PHY 122 - Physics for Engineers and Physical Scientists II	4

Second Year - First Semester

COS 230 - Computer Architecture and Assembly Language	3
MAT 228 - Calculus III	4
Electives	9

Second Year - Second Semester

CMJ 103 - Fundamentals of Public Communication	3
or ENG 101 College Composition.	3
COS 250 - Discrete Structures	3
MAT 262 - Linear Algebra	3
Electives	6

Third Year - First Semester

COS 301 - Programming Languages	3
COS 431 - Operating Systems	3
MAT 434 - Introduction to Statistics	4
Science Elective	4
Electives	3

Third Year - Second Semester

COS 204 - Programming in FORTRAN	1
COS 335 - Computer Organization and Architecture	3
COS 350 - Data Structures and Algorithms	3
COS 420 - Introduction to Software Engineering	3
Science Elective	4
Electives	9

Summer

COS 495 - Field Experience (if selected take 3 Credits)	1-3

Fourth Year - First Semester

ENG 317 - Business and Technical Writing	3
COS Electives	6
ECE Elective	3
Elective	3

Fourth Year - Second Semester

COS 490 - Computers, Ethics and Society	3
COS Electives	6
Electives	6

Economics

Programs in the Department of Economics emphasize the application of economic reasoning to public policy development and to private decision-making. The curriculum in economics includes courses that focus on the understanding of both American economic institutions and international economic institutions. The faculty of the Department of Economics brings a broad set of experiences and perspectives that provide students with diverse learning opportunities. At the undergraduate level, the program strives to develop in students the analytic skills that will prepare them to succeed in a variety of career or advanced educational settings.

The Bachelor of Arts in Economics

The Bachelor of Arts in Economics is a liberal arts program that trains students in economic analysis and the functioning of economic institutions. The program emphasizes public economic policy, both domestic and international. The major offers students valuable preparation for a variety of career paths. Students may design their programs of study:

1. for immediate entry upon graduation into business, government, or other employment;
2. for graduate education leading to a business administration or law degree;
3. for graduate work in economics or related disciplines.

Students are encouraged to work closely with their advisors on matters of career preparation.

Program Requirements:

1. *Economics Core Courses*

ECO 120 - Principles of Microeconomics	3
ECO 121 - Principles of Macroeconomics	3

Note: Of ECO and INT courses taken at the 100 level, only ECO 120 and ECO 121 may be counted toward the Bachelor of Arts in Economics program requirements. (All other 100-level ECO and INT courses may be counted toward the 120 credits required for the baccalaureate degree.) ECO 310 Introduction to Economics/ Accelerated may not be used as a substitute for ECO 120 and ECO 121 in meeting the Economics program requirement.

ECO 420 - Intermediate Microeconomics	3
ECO 421 - Intermediate Macroeconomics	3

Note: ECO 420 and ECO 421 should be taken early in the student's program of study. A minimum grade of C- is required in both ECO 420 and ECO 421.

2. *Twenty-one (21) additional credit hours in ECO courses.*

A minimum of nine (9) credits must be at the 400 level. ECO 480, Introduction to Mathematical Economics and ECO 485, Introduction to Economic

Statistics and Econometrics, are strongly recommended for students considering graduate study in economics.

3. *Mathematics Requirement.*
One of the following:
MAT 114 - Calculus for Business and Economics 3
MAT 115 - Applied Mathematics for Business and Economics 3
MAT 121 - Applied Algebra and Trigonometry 3
MAT 122 - Pre-Calculus 4
MAT 126 - Calculus I 4
MAT 151 - Calculus for the Life Sciences 4
Students considering graduate work in economics at the M.A. level are urged to take MAT 126 Calculus I. Students considering graduate work in economics at the Ph.D. level should consider taking MAT 126 Calculus I and MAT 127 Calculus II as well as MAT 262 Linear Algebra.

4. *Statistics Requirement.*
One of the following:
MAT 215 - Introduction to Statistics for Business and Economics 3
MAT 232 - Principles of Statistical Inference 3
MAT 434 - Introduction to Statistics 4

5. *Recommended:*
BUA 201 - Principles of Financial Accounting I 3
COS 100 - Introduction to the Personal Computer and the Internet 3

6. *A minimum GPA of 2.0 is required in ECO courses.*

Residence Requirement:
Economics majors must complete a minimum of 18 credits of economics credits at the University of Maine.

English

Course work for a Bachelor of Arts in English provides comprehensive instruction in the resources of English, its language and literatures. This instruction is central to a liberal education and fundamental preparation for graduate liberal arts and professional programs. Courses in English teach critical and original thinking and communication. Knowledge gained from majoring in English provides excellent preparation for a wide range of careers that depend on critical and creative thinking and the ability to communicate clearly and persuasively.

Bachelor of Arts in English

Literature
The literature curriculum is designed to provide students with a broad-based foundation in English and American literature as well as in-depth inquiry into focused areas of literary study. Within this curriculum students are encouraged to read creatively and to discover what others have not seen. Students are asked to present these discoveries in writing in a persuasive way that allows others to see their importance. The literature program is enhanced and supported by links to the National Poetry Foundation, an internationally recognized center for the study of modern poetry.

Writing Concentrations
Students must choose a writing concentration within the English major. The three specific concentrations from which students may choose are Creative Writing, Literary Critical Writing and Technical Professional Writing. Each of these areas provides students with both introductory and advanced instruction in the field and prepares students for further education or for work in a large number of professional fields.

Core Requirements for All Majors:
Majors take a minimum of 36 credits in English beyond ENG 101. By the time of graduation, they must demonstrate intermediate proficiency in a language other than English (to the 204 level in college courses, or the equivalent by examination). In addition, all majors share the following core requirements:
ENG 170 - Foundations of Literary Analysis 3
ENG 222 - Reading Poems 3
ENG 271 - The Act of Interpretation 3
Three courses in the chosen writing concentration. 9
One additional ENG course at the 200 level or higher. 3
Five literature courses at the 300 or 400 level including at least one British and one before 1800 15

Writing Concentrations
Students must choose a writing concentration within the English major, usually taking a 9-credit sequence of writing courses beginning at the 200 or 300 level and culminating in directed writing or preprofessional experiences in the senior year.

Creative Writing:
This concentration allows students to explore their worlds with carefully crafted language and to make the writing of imaginative literature a way of life. Course work usually includes:
ENG 205 - An Introduction to Creative Writing 3
or ENG 206 - Descriptive and Narrative Writing 3
ENG 307 - Writing Fiction 3
or ENG 308 - Writing Poetry 3
or ENG 309 - Writing Creative Nonfiction 3
ENG 405 - Directed Writing 3
or ENG 406 - Advanced Creative Writing 3
This sequence is completed by the submission and approval of a finished manuscript (e.g., a novella, or a collection of poems or stories).

Literary Critical Writing:
This concentration is for students of language and literature interested in the crafting of essays, academic papers, feature pieces, and other forms of creative nonfiction; it is also useful for students planning to teach at the secondary or college level. Course work usually includes:
ENG 206 - Descriptive and Narrative Writing 3
or ENG 212 - Persuasive and Analytical Writing 3
ENG 301 - Advanced Composition 3
or ENG 309 - Writing Creative Nonfiction 3
or ENG 310 - Writing and Careers in English 3
or ENG 395 - English Internship 3
This sequence is completed by the submission and approval of the finished research paper.
ENG 499 Capstone Experience in English attached to a 400-level literature course in which the student writes a seminar-level research paper.

Technical/Professional Writing:
This concentration is useful for students planning careers in such diverse professions as law, public relations, management, arts administration, technical writing, and journalism. Course work usually includes:
ENG 317 - Business and Technical Writing 3
ENG 417 - Advanced Professional Writing 3
or ENG 418 - Topics in Professional Writing 3
ENG 496 - Field Experience in Professional Writing 1-6

Senior Capstone Requirement:
The senior capstone requirement applies to all majors in all concentrations. It may be satisfied in a number of ways appropriate to a student's interests and plans, and is normally a natural culmination to previous choices within the major. Most of the capstone options also satisfy other major requirements. Any one of the following courses or experiences may be used:
ENG 395 - English Internship 3

and at least one semester tutoring in the Writing Center
ENG 400-level literature course in which the student writes a seminar-quality research paper.
ENG 405 - Directed Writing 3
or ENG 406 - Advanced Creative Writing 3
and approval of a manuscript
ENG 496 - Field Experience in Professional Writing 1-6
(at least 3 hrs.)
Approval of an Honors thesis with a topic in an area of English studies

Note: Students using ENG 395, ENG 405, ENG 406, or a 400-level literature course as a capstone must register for ENG 499 (zero credit, zero tuition) during the semester they will complete tutoring (ENG 395) or complete the manuscript (ENG 405 and ENG 406) or write the research paper in the 400-level literature class. This is the accounting mechanism that signals Student Records to count these courses as a capstone.

Suggested curriculum for the B.A. in English

First Year - First Semester
ENG 101 - College Composition 3
or ENG 129 - Topics in English 3
or ENG 170 - Foundations of Literary Analysis 3
LAS 100 - Majoring in the Liberal Arts and Sciences 1
General Education or Laboratory Science 6-9
Language (continue High School language or start new) 4

First Year - Second Semester
ENG 101 - College Composition 3
or ENG 129 - Topics in English 3
or ENG 170 - Foundations of Literary Analysis 3
Language 4
General Education 8-9

Second Year - First Semester
ENG 205 - An Introduction to Creative Writing 3
or ENG 206 - Descriptive and Narrative Writing 3
or ENG 212 - Persuasive and Analytical Writing 3
or ENG 222 - Reading Poems 3
ENG 317 - Business and Technical Writing 3
103-level language, if needed, or credits chosen from General Education options and free electives. If possible, take 3 credits in an upper-level BA course outside English while exploring possible other major and minor options. 4-6

Second Year - Second Semester
ENG 205 - An Introduction to Creative Writing 3
or ENG 206 - Descriptive and Narrative Writing 3
or ENG 212 - Persuasive and Analytical Writing 3
or ENG 317 - Business and Technical Writing. 3
ENG 271 - The Act of Interpretation 3
ENG 200 or 400-level 3
204-level lenaguage if needed or credits chosen from remaining General Education and BA requirements and free electives 3-4

Third Year - First Semester
ENG 300 or 400-level writing course in concentration. 3
ENG 300 or 400-level literature courses 3-6
General Education and B.A. Requirements 6-9

Third Year - Second Semester
ENG 300 or 400-level writing course 3
ENG 300 or 400-level literature course 3-6
Electives, other program requirements remaining 3-6

Fourth Year - First Semester
ENG 300 or 400-level courses including capstone options 3-12
Electives 3-9

Fourth Year - Second Semester
Finish capstone and ENG 300/400-level courses if you haven't already done so. Major credits should total at least 36, with minimum GPA in major courses of 2.0. Total credits earned should be at least 120, with an overall GPA of 2.0. 15

Note: A minimum of 72 credits must be completed outside of the major.

Financial Economics

This program combines the resources of the Department of Economics, in the College of Liberal Arts and Sciences, and the Maine Business School to offer a specialized curriculum in financial economics in the context of a liberal arts education. The program is designed to prepare students for employment in occupations where specific knowledge of financial economics will be useful in entry-level positions and in enhancing subsequent opportunities for advancement. The program also provides a strong undergraduate background for graduate professional degrees in business, economics, and law. The multi-disciplinary approach incorporates the fundamentals of economic theory in the areas of macroeconomics and monetary economics along with the applied analytical tools of finance and econometrics.

Program Requirements:

1. Required Economics (ECO) courses:
ECO 120 - Principles of Microeconomics 3
ECO 121 - Principles of Macroeconomics 3
ECO 339 - International Finance 3
ECO 353 - Money and Banking 3
ECO 420 - Intermediate Microeconomics 3
ECO 421 - Intermediate Macroeconomics 3
ECO 485 - Introduction to Economic Statistics and Econometrics 3-4
One additional 300- or 400-level ECO course

Note: Of ECO and INT courses taken at the 100 level, only ECO 120 and ECO 121 may be counted toward the Bachelor of Arts in Financial Economics program requirements. (All other 100-level ECO and INT courses may be counted toward the 120 credits required for the baccalaureate degree.) ECO 310 Introduction to Economics/ Accelerated may not be used as a substitute for ECO 120 and ECO 121.

ECO 420 and ECO 421 should be taken early in the student's program of study. A minimum grade of C- is required in both ECO 420 and ECO 421.

2. Required Maine School of Business courses:
BUA 201 - Principles of Financial Accounting I 3
BUA 202 - Principles of Managerial Accounting 3
BUA 350 - Business Finance 3
BUA 352 - Financial Institutions 3
Two additional courses from among the following:
BUA 351 - Corporate Treasury Dynamics 3
BUA 353 - Investment Strategy 3
BUA 454 - Financial Derivatives 3

3. Mathematics requirement:
MAT 126 - Calculus I 4
or MAT 151 - Calculus for the Life Sciences 4

4. Statistics requirement:
MAT 215 - Introduction to Statistics for Business and Economics 3
MAT 232 - Principles of Statistical Inference 3
MAT 434 - Introduction to Statistics 4

5. A Minimum grade-point average of 2.0 is required in all required courses.

Residence requirement:

Financial Economics majors must complete a minimum of 12 of the required credits in economics and 6 of the required credits in business at the University of Maine.

French

General Requirements:

1. Demonstration of listening comprehension, oral, reading, and writing proficiency (students who have not received at least a "B" in FRE 305 or 306 may be required to take a test in languages skills), and
2. Demonstration of comprehensive coverage of literature and civilization through successful completion of appropriate course work, and
3. A minimum of 30 hours beyond the intermediate level.

Special Requirements:

12 credit hours above intermediate level that must include either:

FRE 305 - French Conversation and Composition I 3
FRE 306 - French Conversation and Composition II 3
and either
FRE 209 - Readings in French Literature I 3
or FRE 310 - Readings in French Literature II 3

At least 18 hours of 400-level French courses, which must include:

FRE 400 - Advanced French Grammar 3
FRE 420 - French Phonetics 3
Two courses in literature
French, French-Canadian, or Franco-American Civilization 3
FRE 397 - French (May Term) 3
in Québec or other immersion programs offered by the department (Waived for a full-year or semester abroad experience.)

Strongly Recommended:

INT 410 - (ANT, ENG, MLC) Introduction to the Study of Linguistics 3
History of a Francophone Country 3
Full-year or semester-abroad program

German

General Requirements:

1. Demonstration of listening comprehension, oral, reading, and writing proficiency (students who have not received at least a "B" in GER 306 may be required to take a test in languages skills), and
2. Demonstration of comprehensive coverage of literature and civilization through successful completion of appropriate course work, and
3. 30 credits above intermediate level.

Special Requirements:

GER 306 - Readings in German Literature I 3

Highly Recommended:

Study abroad - Junior Year in Salzburg(or equivalent)

History

The History Department offers a wide variety of chronological, geographical, and thematic courses that enhance individuals' understanding of themselves and the contemporary world by expanding their experiences to include the experiences of other peoples, both past and present. These courses range from ancient times to the present, cover most geographical regions of the world, and allow topical specialties ranging from women's or environmental history to the history of technology or sports. History graduates can and do find employment in a wide range of occupations. Traditionally they have gone into teaching and education careers in primary and secondary schools and, with appropriate graduate-level training, colleges or universities. More recently, increasing numbers of history graduates find their way into private, non-profit as well as public organizations or agencies, such as museums, archives and libraries, research and service institutions, legislative bodies, and planning agencies. Others find career opportunities in the private sector, including publishing, journalism or broadcasting, or law firms; in fact, history is an ideal pre-law major.

The Department of History 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 twelve three-credit courses in history, including:

A. At least 2 courses (1 must be upper 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 worldwide or a topical focus.

B. At least eight upper-level history courses, distributed as follows:
   1. A primary concentration of four courses from a single geographical, chronological or topical area.
   2. One senior seminar (HTY 498) normally taken during the student's final undergraduate year.
   3. Three upper-level elective history courses from any area.

In addition, History majors must complete an outside field requirement that may be satisfied by one of the following:

1. Demonstrated proficiency in a foreign language at the intermediate level, by either examination or through course work.
2. Completion of a minor in another discipline requiring at least four courses above the survey level. These courses may not have been presented to satisfy the General Education Requirements.
3. Completion of an approved Interdisciplinary Curriculum (see section on "Interdisciplinary Curricula" in this catalog) requiring at least four courses beyond the survey level. These courses may not have been presented to satisfy the General Education Requirements. The History Department reserves the right to devise and approve additional, but comparable, "interdisciplinary curricula" other than those listed in this catalog.
4. Completion of a second major.

Students who transfer from other institutions must take a minimum of 6 courses within the department. All students must earn at least a "C" in all courses applied to the major.

Suggested curriculum for the B.A. in History

First Year - First Semester

ENG 101 - College Composition 3
LAS 100 - Majoring in the Liberal Arts and Sciences 1
HTY 1XX Introductory Elective 3
First semester language 3
Electives/General Education Requirements 6

First Year - Second Semester

HTY 1XX Introductory Elective 3
Second semester language 3
Electives/General Education Requirements 9

Second Year - First Semester
HTY 1XX or 2XX Introductory Elective 3
HTY 3XX or 4XX Advanced Elective 3
Third semester language 3
Electives/General Education Requirements 6

Second Year - Second Semester
HTY 1XX or 2XX Introductory Elective 3
HTY 3XX or 4XX Advanced Elective 3
Fourth semester language 3
Electives/General Education Requirements 6

Third Year - First Semester
HTY 3XX or 4XX Advanced Elective 6
Electives/General Education Requirements 9

Third Year - Second Semester
HTY 3XX or 4XX Advanced Elective 6
Electives/General Education Requirements 9

Fourth Year - First Semester
HTY 3XX or 4XX Advanced Elective 3
Electives 12

Fourth Year - Second Semester
HTY 498 - Senior Seminar in History 3
Electives 12

Interdisciplinary Studies

The Bachelor of Arts program in Interdisciplinary Studies allows students to design an individualized major under the supervision of a Program Committee composed of at least three faculty members from three different departments in the College of Liberal Arts and Sciences. This program of study must meet individualized educational goals that cannot be achieved within any departmentally based major program. Students pursuing a BA in Interdisciplinary Studies work closely with their committees in planning and completing an integrated, coherent, interdisciplinary sequence of courses, including at least 36 credits from three or more departments with 27 credits from departments in the College of Liberal Arts and Sciences. At least 27 of these credits must be in upper-level courses (that is, courses with a prerequisite), and no more than 18 credits may be taken from any one department. The program committee may also establish additional major requirements, such as a language requirement, and all programs must include a capstone experience. Sample interdisciplinary programs include Religious Studies, Film Studies, Black Studies, Franco-American Studies, and Native American Studies.

International Affairs

A student in the College of Liberal Arts and Sciences may major in International Affairs in anthropology, economics, foreign languages, history or political science.

The Bachelor of Arts program in International Affairs is designed to prepare students for careers or graduate training in international affairs. Globalization will present new employment opportunities in business and government that will require employees to understand the history, political economy, and culture of other nations. The International Affairs program recognizes the multiple dimensions of globalization by emphasizing a multi-disciplinary approach: a core set of courses that include anthropology, economics, foreign languages, history and political science, and a concentration in one of these fields. Students who complete the program will have obtained:

- a broad familiarity with the field of international affairs;
- a basic understanding of the analytical tools used by the disciplines represented in the program as these are applied to international issues or issues confronted by other nations;
- an ability to understand the various facets of globalization in the context of a culturally diverse world.

Each student majoring in International Affairs is encouraged to devote at least one semester to study abroad. Students are also encouraged to take advantage of internship opportunities in international affairs. The program is administered by a director who works in conjunction with the International Affairs Advisory Committee, which consists of faculty representatives of the participating departments.

Core Requirements

International Affairs' core requirements must be completed with grades of C or better.

Anthropology (6 credits)
ANT 102 - Introduction to Anthropology: Diversity of Cultures 3
and 3 credits chosen from the following:
ANT 120 - Religions of the World 3
ANT 454 - Cultures and Societies of the Middle East 3
ANT 456 - Ethnic Conflict in the Modern World 3
ANT 459 - Peoples and Cultures of South America 3
ANT 461 - Islamic Fundamentalism 3
ANT 470 - Religion and Politics 3
GEO 201 - Introduction to Human Geography 3

Economics (6 credits)
ECO 120 - Principles of Microeconomics 3
ECO 121 - Principles of Macroeconomics 3

Foreign Languages (6 credits)
Six credit hours in a foreign second language beyond the intermediate level. Students should discuss with the academic adviser how courses taken abroad might meet this requirement. International students whose native language is not English may count English as their second foreign language. They must have a minimum of 550 (written) or 213 (computer score) on TOEFL, or a similar level in any equivalent tests. For more information, all international students should consult with the Intensive English Institute (IEI), (207) 581-3821.

History (6 credits)
3 credit hours from the following:
HTY 105 - History of European Civilization I 3
HTY 106 - History of European Civilization II 3

and 3 credit hours from the following:
HTY 107 - East Asian Civilization I 3
HTY 108 - South and Southeast Asian Civilization 3
HTY 109 - Introduction to Latin America 3
HTY 112 - Introduction to Africa 3

Political Science (6 credits)
POS 120 - Introduction to World Politics 3

and 3 credit hours from the following:
POS 241 - Introduction to Comparative Politics 3
POS 243 - Canadian Government and Politics 3
POS 273 - International Relations 3
POS 336 - Government and Politics in Russia 3
POS 374 - American Foreign Policy 3

Concentration Requirements

Twenty-one credit hours with minimum GPA of 2.0 beyond the core requirements above, including a Capstone course or experience, as stipulated by each department as follows. A minimum of 15 hours in residence in the major is normally required. The University requires a total of 30 hours in residence.

International Affairs / Anthropology

In addition to the International Affairs core requirements, students interested in the International Affairs / Anthropology major must complete 21 credit hours from ANT courses listed below. Students presenting a course to satisfy a core requirement may not also use that course toward their concentration requirement.
ANT 120 - Religions of the World 3
ANT 173 - Archaeology of American Civilization 3
ANT 441 - People and Cultures of the Pacific Islands 3

ANT 452 - Civilization in South Asia 3
ANT 453 - People and Cultures of Mesoamerica 3
ANT 454 - Cultures and Societies of the Middle East 3
ANT 456 - Ethnic Conflict in the Modern World 3
ANT 459 - Peoples and Cultures of South America 3
ANT 461 - Islamic Fundamentalism 3
ANT 464 - Cultural Ecology 3
ANT 465 - Political Anthropology 3
ANT 466 - Economic Anthropology 3
ANT 467 - Peasant Studies 3
ANT 470 - Religion and Politics 3
ANT 492 - Capstone in Anthropology 1
GEO 201 - Introduction to Human Geography 3

International Affairs / Economics

In addition to the International Affairs core requirements, the International Affairs/ Economics major is expected to complete twenty-one hours of ECO courses with a minimum GPA of 2.0, a course in mathematics, and a course in statistics, as specified below.

ECO 420 - Intermediate Microeconomics 3
ECO 421 - Intermediate Macroeconomics 3

A minimum of three courses chosen from the following courses with an international focus:
Additional ECO courses

Additional ECO courses adding to a total of 21 credit hours of ECO courses beyond the core requirements, including an ECO capstone course.

ECO 329 - Global Political Economy 3
ECO 338 - Economic Development 3
ECO 339 - International Finance 3
ECO 340 - Canadian Economics: Issues and Policies 3
ECO 343 - North American Economic Integration 3
ECO 449 - International Trade 3

Note: With permission, students may substitute ECO 525 Advanced Topics in Economic Development for ECO 338 Economic Development, or 524 Advanced International Finance for ECO 339 International Finance.

One of the following mathematics courses:
MAT 114 - Calculus for Business and Economics 3
MAT 121 - Applied Algebra and Trigonometry 3
MAT 122 - Pre-Calculus 4
MAT 126 - Calculus I 4
MAT 151 - Calculus for the Life Sciences 4

One of the following statistics courses:
MAT 215 - Introduction to Statistics for Business and Economics 3
MAT 232 - Principles of Statistical Inference 3
MAT 434 - Introduction to Statistics 4

International Affairs / Foreign Languages

Students interested in International Affairs / Foreign Languages must select one of the following areas:

International Affairs / French (IA/FRE)
International Affairs / German (IA/GER)
International Affairs / Spanish (IA/SPA)

Students may combine a program of 21 hours above the introductory level in French, German or Spanish with 6 hours each in Anthropology, Economics, History, and Political Science from among appropriate courses with an international focus. No 100-level courses are applicable, and a maximum of six hours is allowed in 200-level courses. At least 15 hours in 300-level or above as well as the required Senior Capstone course are required. Study Abroad is very strongly recommended. Students wanting strong skills in a second language should consider combining the IA/French, German, and Spanish major with a minor in the second target language.

International Affairs / French

The following courses will count toward the degree in IA/FRE:

FRE 201 - Intermediate French I 3-4
FRE 202 - Intermediate French II 3-4
FRE 209 - Readings in French Literature I 3
FRE 250 - Multidisciplinary Readings in French 1
FRE 305 - French Conversation and Composition I 3
FRE 306 - French Conversation and Composition II 3
FRE 307 - French for Business 3
FRE 310 - Readings in French Literature II 3
FRE 315 - Advanced French Conversation 3
FRE 397 - French (May Term) 3
FRE 440 - Franco-American Civilization 3
Any other 400 level course with the designator FRE

International Affairs / German

The following courses will count toward the degree in IA/GER:

GER 305 - Practical German 3
GER 306 - Readings in German Literature I 3
GER 404 - Translation: Theory and Practice 3
Any other 400 level course with the designator GER

International Affairs / Spanish

The following courses will count toward the degree in IA/SPA:

SPA 206 - Spanish Conversation and Composition 3
SPA 307 - Readings in Peninsular Literature 3
SPA 308 - Readings in Spanish American Literature 3

International Affairs / History

In addition to the International Affairs core requirements, students interested in the International Affairs / History must complete 21 credit hours of HTY courses listed below, including the capstone, HTY 498.

HTY 105 - History of European Civilization I 3
HTY 106 - History of European Civilization II 3
HTY 107 - East Asian Civilization I 3
HTY 108 - South and Southeast Asian Civilization 3
HTY 109 - Introduction to Latin America 3
HTY 112 - Introduction to Africa 3
HTY 407 - The Age of Revolution, 1789-1860 3
HTY 408 - 19th Century Europe, 1815-1914 3
HTY 409 - Twentieth Century Europe I, 1914-1945 3
HTY 410 - 20th Century Europe II, Since 1945 3
HTY 424 - History of Russia II:The Russian Revolution, 1881-1991 3
HTY 426 - History of Modern Germany 3
HTY 429 - History of Modern Italy 3
HTY 437 - History of Modern Japan 3
HTY 442 - The United States and Vietnam: A History 3
HTY 446 - History of Modern Middle East, 1800-Present 3
HTY 454 - History of Ireland II 3
HTY 456 - History of England II 3
HTY 460 - Modern Canada 3
HTY 473 - History of U.S. Foreign Relations I 3
HTY 474 - History of U.S. Foreign Relations II 3
HTY 482 - History of Canadian-American Relations 3
HTY 498 - Senior Seminar in History 3
Other International Affairs/History courses must be approved by advisor.

International Affairs/Political Science

In addition to the International Affairs core requirements, students interested in the International Affairs/Political Science major must complete 21 credit hours from POS courses listed below. Students presenting a course to satisfy a core requirement may not also use that course toward their concentration requirement.

INA 201 - Topics in International Affairs 3
POS 241 - Introduction to Comparative Politics 3
POS 243 - Canadian Government and Politics 3
POS 273 - International Relations 3
POS 335 - Major Governments of Western Europe 3
POS 336 - Government and Politics in Russia 3
POS 337 - Government and Politics in Eurasia 3
POS 344 - Public Policy in Canada 3

POS 372 - Canadian Foreign Policy 3
POS 374 - American Foreign Policy 3
POS 375 - United States and the Middle East 3
POS 377 - International Law 3
POS 469 - Politics of the Middle East 3
POS 474 - Instruments of American Foreign Policy Making 3
POS 475 - International Security 3
POS 476 - Seminar in World Politics 3
POS 499 - Senior Seminar in Political Science 3
(required)
POS 531 - Topics in Comparative Politics 3

Study Abroad / Internships

International affairs majors are encouraged to explore opportunities for study abroad. Living and studying in a foreign country enriches the undergraduate experience and prepares students for careers with an international dimension. Study Abroad programs vary in length from an intensive week to an entire academic year; summer programs are also available. A Study Abroad fact-sheet is available from the Office of International Programs.

Journalism

The Depertment of Communication and Journalism offers three different BA degrees. These degrees are in: Communication, Mass Communication and Journalism. The department also offers minors in Communication and in Public Relations. The BA in Journalism requires coursework to be completed in one of three sequences—Advertising, Broadcast Journalism, News Editorial—that prepare students for leadership roles in news, advertising and journalism careers in Maine and nationwide. The Journalism major offers students strong oral and written expression skills, a firm grasp of public affairs, and a broad foundation in the liberal arts regardless of students' ultimate career plans. The major also prepares students for graduate study in related communication fields, law, the humanities and social sciences. Full-time faculty members are established scholars who draw on extensive professional experience and ongoing contacts with journalism organizations. Part-time faculty with careers in news and advertising share their state-of-the-art knowledge with students. The department maintains productive relations with journalism enterprises and associations in the state, and houses the Maine Center for Student Journalism, which supports student journalists and advisors in secondary schools statewide. Through an active internship program students also gain practical experience and professional contacts in the industry before they enter the job market.

General Skills and Education Requirements:

The program emphasizes a broad liberal arts curriculum. In keeping with national accreditation standards, students are required to complete approximately 75% of degree coursework outside the major including the following curriculum of general education and skills courses.

Foundation Courses:

History: 6 credits
ONE of the following sequences:
HTY 103 - United States History I 3
and HTY 104 - United States History II 3
or HTY 105 - History of European Civilization I 3
and HTY 106 - History of European Civilization II 3
or HTY 107 - East Asian Civilization I 3
and HTY 108 - South and Southeast Asian Civilization 3

Behavioral Science: 6 credits
PSY 100 - General Psychology 3
Plus one of the following:
ANT 101 - Introduction to Anthropology: Human Origins and Prehistory 3
ANT 102 - Introduction to Anthropology: Diversity of Cultures 3
SOC 101 - Introduction to Sociology 3

Political Science: 6 credits
POS 100 - American Government 3
Plus one other POS course 3

Economics: 3 credits
ONE of the following:
ECO 120 - Principles of Microeconomics 3
ECO 121 - Principles of Macroeconomics 3
INT 105 - (ECO, REP) Environmental Policy 3
INT 110 - (ECO, REP) Modern Economic Problems 3

Arts and Humanities: 12 credits
In literature and philosophy with a minimum of three credits in each subject.

Communication: 3 credits
ONE of the following:
CMJ 102 - Fundamentals of Interpersonal Communication 3
CMJ 103 - Fundamentals of Public Communication 3
CMJ 106 - Oral Communication of Literature 3

Language: 6 credits
From French, German, Spanish or other language

Department Course Requirements:

To satisfy the requirements for the Bachelor of Arts degree, students must complete a minimum of 30 credits of CMJ courses. Students are encouraged to consider a second major or a minor.

For students transferring equivalent courses from other colleges, a minimum of 24 credits of CMJ courses must be taken for the degree, regardless of the number of equivalent courses accepted in transfer. The faculty will determine equivalency (if any) of transfer courses in the discipline. Some CMJ courses require the completion of one or more prerequisite courses.

A grade of "C-" or better is required in all CMJ courses submitted to satisfy departmental requirements for the major. A passing grade is required in all departmental "Foundation Courses."

Core Requirements
CMJ 100 - Introduction to Mass Communication 3
CMJ 211 - History of Mass Communication 3
CMJ 236 - Writing for the Mass Media 3
CMJ 375 - Mass Media Law and Regulation 3
CMJ 489 - Seminar in Media Ethics and Issues 3

Journalism (Advertising Sequence):
CMJ 250 - Introduction to Advertising 3
CMJ 355 - Advertising Copy and Graphics 3
CMJ 356 - Advertising Media 3
CMJ 380 - Advertising, Media and Society 3
CMJ 459 - Advertising Campaigns 3

Journalism (Broadcast Journalism Sequence):
CMJ 237 - Newswriting and Reporting 3
CMJ 340 - Broadcast Newswriting and Reporting 3
CMJ 343 - Radio News Practicum 3
CMJ 351 - Techniques of Video Production 3
CMJ 376 - Programming and Criticism of Electronic Media 3
CMJ 451 - Advanced Electronic Reporting and Production 3

Journalism (News Editorial Sequence):
CMJ 237 - Newswriting and Reporting 3
CMJ 330 - Copy Editing 3
CMJ 332 - Public Affairs Reporting 3
CMJ 434 - Editorial and Opinion Writing 3
CMJ 435 - Feature Writing 3

Suggested curriculum for the B.A. in Journalism (Advertising Sequence)

First Year - First Semester
CMJ 100 - Introduction to Mass Communication 3
ENG 101 - College Composition 3
French, German, or Spanish course 3
HTY 103 - United States History I 3

or HTY 105 - History of European Civilization I 3
or HTY 107 - East Asian Civilization I 3
PSY 100 - General Psychology 3

First Year - Second Semester
CMJ 102 - Fundamentals of Interpersonal Communication 3
or CMJ 103 - Fundamentals of Public Communication 3
or CMJ 106 - Oral Communication of Literature 3
French, German, or Spanish course 3
CMJ 250 - Introduction to Advertising 3
HTY 104 - United States History II 3
or HTY 106 - History of European Civilization II 3
or HTY 108 - South and Southeast Asian Civilization 3
POS 100 - American Government 3

Second Year - First Semester
CMJ 211 - History of Mass Communication 3
POS Elective 3
General Education Science or Math/Statistics 3
Literature or Philosophy 3
Behavioral Science
ONE of the following:
ANT 101 - Introduction to Anthropology: Human Origins and Prehistory 3
or ANT 102 - Introduction to Anthropology: Diversity of Cultures 3
or SOC 101 - Introduction to Sociology 3

Second Year - Second Semester
CMJ 236 - Writing for the Mass Media 3
CMJ 375 - Mass Media Law and Regulation 3
General Education Science or Math/Statistics 3
Literature or Philosophy 3
Economics
ONE of the following:
ECO 120 - Principles of Microeconomics 3
or ECO 121 - Principles of Macroeconomics 3
or INT 110 - (ECO, REP) Modern Economic Problems 3

Third Year - First Semester
CMJ 355 - Advertising Copy and Graphics 3
CMJ 356 - Advertising Media 3
General Education Science or Math/Statistics 3
Literature or Philosophy 6

Third Year - Second Semester
CMJ 380 - Advertising, Media and Society 3
CMJ 459 - Advertising Campaigns 3
General Education Science or Math/Statistics 3
Literature or Philosophy 3
Elective ** 6

Fourth Year - First Semester
CMJ 489 - Seminar in Media Ethics and Issues 3
Electives ** 12

Fourth Year - Second Semester
Electives** 15

** May be used to meet remaining General Education requirements in Human Values and Social Contexts, College B.A. requirements for 9 credits of upper level courses, or department requirements for 6 credits of cultural diversity/international perspective.

Suggested curriculum for the B.A. in Journalism (Broadcast Journalism Sequence)

First Year - First Semester
CMJ 100 - Introduction to Mass Communication 3
ENG 101 - College Composition 3
French, German or Spanish course 3
PSY 100 - General Psychology 3
History
ONE of the following:
HTY 103 - United States History I 3
or HTY 105 - History of European Civilization I 3
or HTY 107 - East Asian Civilization I 3

First Year - Second Semester
CMJ 211 - History of Mass Communication 3
French, German, or Spanish course 3
POS 100 - American Government 3
Communication
ONE of the following:
CMJ 102 - Fundamentals of Interpersonal Communication 3
or CMJ 103 - Fundamentals of Public Communication 3
or CMJ 106 - Oral Communication of Literature 3
History
ONE of the following
HTY 104 - United States History II 3
or HTY 106 - History of European Civilization II 3
or HTY 108 - South and Southeast Asian Civilization 3

Second Year - First Semester
CMJ 236 - Writing for the Mass Media 3
General Education Science or Mathematics/Statistics 3
Literature or Philosophy 6
Behavioral Science
ONE of the following:
ANT 101 - Introduction to Anthropology: Human Origins and Prehistory 3
ANT 102 - Introduction to Anthropology: Diversity of Cultures 3
SOC 101 - Introduction to Sociology 3

Second Year - Second Semester
CMJ 237 - Newswriting and Reporting 3
General Education Science or Mathematics/Statistics 3
Literature or Philosophy 3
Elective 3
Economics
ONE of the following:
ECO 120 - Principles of Microeconomics 3
ECO 121 - Principles of Macroeconomics 3
INT 105 - (ECO, REP) Environmental Policy 3
INT 110 - (ECO, REP) Modern Economic Problems 3

Third Year - First Semester
CMJ 375 - Mass Media Law and Regulation 3
General Education Science or Mathematics/Statistics 3
POS Elective 3
Literature or Philosophy 3

Third Year - Second Semester
CMJ 340 - Broadcast Newswriting and Reporting 3
CMJ 343 - Radio News Practicum 3
CMJ 376 - Programming and Criticism of Electronic Media 3
General Education Science or Mathematics/Statistics 3
Electives 3

Fourth Year - First Semester
CMJ 351 - Techniques of Video Production 3
CMJ 489 - Seminar in Media Ethics and Issues 3
Electives** 9

Fourth Year - Second Semester
CMJ 451 - Advanced Electronic Reporting and Production 3
Electives** 12

** May be used to meet remaining General Education requirements in Human Values and Social Contexts, College B.A. requirements for 9 credits of upper level courses, or department requirements for 6 credits of cultural diversity/international perspective.

Suggested curriculum for the B.A. in Journalism (News Editorial Sequence)

First Year - First Semester
CMJ 100 - Introduction to Mass Communication 3
ENG 101 - College Composition 3
French, German, or Spanish course 3
PSY 100 - General Psychology 3
History
ONE of the following:
HTY 103 - United States History I 3

or HTY 105 - History of European Civilization I 3
or HTY 107 - East Asian Civilization I 3

First Year - Second Semester
CMJ 211 - History of Mass Communication 3
CMJ 236 - Writing for the Mass Media 3
French, German, or Spanish course 3
Communications
ONE of the following:
CMJ 102 - Fundamentals of Interpersonal Communication 3
or CMJ 103 - Fundamentals of Public Communication 3
or CMJ 106 - Oral Communication of Literature 3
History
ONE of the following:
HTY 104 - United States History II 3
or HTY 106 - History of European Civilization II 3
or HTY 108 - South and Southeast Asian Civilization 3

Second Year - First Semester
CMJ 237 - Newswriting and Reporting 3
POS 100 - American Government 3
General Education Science or Math/Statistics 3
Literature or Philosophy 3
Behavioral Science
ONE of the following:
ANT 101 - Introduction to Anthropology: Human Origins and Prehistory 3
ANT 102 - Introduction to Anthropology: Diversity of Cultures 3
SOC 101 - Introduction to Sociology 3

Second Year - Second Semester
CMJ 375 - Mass Media Law and Regulation 3
General Education Science or Mathematics/Statistics 3
Literature or Philosophy 3
POS Elective 3
Economics
ONE of the following:
ECO 120 - Principles of Microeconomics 3
or ECO 121 - Principles of Macroeconomics 3
or INT 105 - (ECO, REP) Environmental Policy 3
or INT 110 - (ECO, REP) Modern Economic Problems 3

Third Year - First Semester
CMJ 330 - Copy Editing 3
CMJ 434 - Editorial and Opinion Writing 3
General Education Science or Mathematics/Statistics 3
Literature or Philosophy 3
Elective** 3

Third Year - Second Semester
CMJ 332 - Public Affairs Reporting 3
CMJ 435 - Feature Writing 3
General Education Science or Mathematics/Statistics 3
Literature or Philosophy 3
Elective** 3

Fourth Year - First Semester
CMJ 489 - Seminar in Media Ethics and Issues 3
Electives** 12

Fourth Year - Second Semester
CMJ Elective (e.g. CMJ 495) 3
Electives** 12

** May be used to meet remaining General Education requirements in Human Values and Social Contexts, College B.A. requirements for 9 credits of upper level courses, or department requirements for 6 credits of cultural diversity/international perspective.

Latin

General Requirements:

1. Demonstration of reading and writing proficiency.
2. Demonstration of comprehensive coverage of literature and civilization through successful completion of appropriate course work.
   Special Requirements:
   - 24 credits beyond the intermediate level.
   - CLA 102 Latin Literature in English Translation.
   - LAT 247/248 Latin Prose Composition and Stylistics I/II should be taken in the junior year or earlier.
   - 18 credits in two or more related disciplines in Liberal Arts and Sciences, including other languages and courses in translation offered by the department.
   - If pursuing Classical Studies should take 6 credits in Greek and CLA 101 Greek Literature in English translation and CLA 102 Latin Literature in English Translation

Mass Communication

The Department of Communication and Journalism offers three different BA degrees. These degrees are in: Communication, Mass Communication and Journalism. The department also offers minors in Communication and in Public Relations. The Mass Communication major prepares students for careers in the electronic media in Maine and nationwide. Firmly grounded in the liberal arts, it provides students with a background in history, legal, regulatory, ethical and management issues necessary for a career in mass communication or for graduate study. Faculty are established scholars who draw on extensive professional experience and ongoing contacts with media organizations and associations in the state and beyond. An Active internship program encourages students to become acquainted with working in mass communication organizations and thus have demonstrable work experience, professional contacts and an understanding of the industry before they enter the job market.

General Skills and Education Requirements:

The program emphasizes a broad liberal arts curriculum. In keeping with national accreditation standards, students are required to complete approximately 75% of degree coursework outside the major including the following curriculum of general education and skills courses.

Foundation Courses:

History: 6 credits
ONE of the following sequences:
HTY 103 - United States History I 3
and HTY 104 - United States History II 3
or HTY 105 - History of European Civilization I 3
and HTY 106 - History of European Civilization II 3
or HTY 107 - East Asian Civilization I 3
and HTY 108 - South and Southeast Asian Civilization 3

Behavioral Science: 6 credits
PSY 100 - General Psychology 3
Plus one of the following:
ANT 101 - Introduction to Anthropology: Human Origins and Prehistory 3
ANT 102 - Introduction to Anthropology: Diversity of Cultures 3
SOC 101 - Introduction to Sociology 3

Political Science: 6 credits
POS 100 - American Government 3
Plus one other POS course 3

Economics
ONE of the following:
ECO 120 - Principles of Microeconomics 3
ECO 121 - Principles of Macroeconomics 3
INT 105 - (ECO, REP) Environmental Policy 3
INT 110 - (ECO, REP) Modern Economic Problems 3

Arts and Humanities: 12 credits
In literature and philosophy with a minimum of three credits in each subject.

Communication: 3 credits
ONE of the following:
CMJ 102 - Fundamentals of Interpersonal Communication 3
CMJ 103 - Fundamentals of Public Communication 3
CMJ 106 - Oral Communication of Literature 3

Language: 6 credits
From French, German, Spanish or other language.

Department Course Requirements:

To satisfy the requirements for the Bachelor of Arts degree, students must complete a minimum of 30 credits of CMJ courses. Students are encouraged to consider a second major or a minor.

For students transferring equivalent courses from other colleges, a minimum of 24 credits of CMJ courses must be taken for the degree, regardless of the number of equivalent courses accepted in transfer. The faculty will determine equivalency (if any) of transfer courses in the discipline. Some JMC courses require the completion of one or more prerequisite courses.

A grade of "C-" or better is required in all CMJ courses submitted to satisfy departmental requiements for the major. A passing grade is required in all departmental "Foundation Courses".

Core Requirements
CMJ 100 - Introduction to Mass Communication 3
CMJ 211 - History of Mass Communication 3
CMJ 236 - Writing for the Mass Media 3
CMJ 375 - Mass Media Law and Regulation 3
CMJ 489 - Seminar in Media Ethics and Issues 3

Major Course Requirements
CMJ 250 - Introduction to Advertising 3
CMJ 314 - International Mass Communication 3
CMJ 376 - Programming and Criticism of Electronic Media 3
CMJ 380 - Advertising, Media and Society 3
CMJ 412 - Electronic Media Management 3

Suggested curriculum for BA in Mass Communication
First Year - First Semester
CMJ 100 - Introduction to Mass Communication 3
ENG 101 - College Composition 3
French, German, or Spanish course 3
HTY 103 - United States History I 3
or HTY 105 - History of European Civilization I 3
or HTY 107 - East Asian Civilization I 3
PSY 100 - General Psychology 3

First Year - Second Semester
CMJ 102 - Fundamentals of Interpersonal Communication 3
or CMJ 103 - Fundamentals of Public Communication 3
or CMJ 106 - Oral Communication of Literature 3
French, German, or Spanish course 3
CMJ 211 - History of Mass Communication 3
HTY 104 - United States History II 3
or HTY 106 - History of European Civilization II 3
or HTY 108 - South and Southeast Asian Civilization 3
POS 100 - American Government 3

Second Year - First Semester
ANT 101 - Introduction to Anthropology: Human Origins and Prehistory 3
or ANT 102 - Introduction to Anthropology: Diversity of Cultures 3
or SOC 101 (see below)
CMJ 236 - Writing for the Mass Media 3
SOC 101 - Introduction to Sociology 3
or ANT 101 or ANT 102 (see above)
General Education Science or Mathematics/Statistics 6
Literature or Philosophy 3

Second Year - Second Semester
CMJ 250 - Introduction to Advertising 3
CMJ 314 - International Mass Communication 3
General Education Science or Mathematics/Statistics 3
Literature or Philosophy 3
ECO 120 - Principles of Microeconomics 3
or ECO 121 - Principles of Macroeconomics 3
or INT 105 - (ECO, REP) Environmental Policy 3
or INT 110 - (ECO, REP) Modern Economic Problems 3

Third Year - First Semester
CMJ 375 - Mass Media Law and Regulation 3
General Education Science or Mathematics/Statistics 3
POS Elective 3
Literature or Philosophy 6

Third Year - Second Semester
CMJ 376 - Programming and Criticism of Electronic Media 3
CMJ 380 - Advertising, Media and Society 3
Electives ** 6

Fourth Year - First Semester
CMJ 412 - Electronic Media Management 3
CMJ 489 - Seminar in Media Ethics and Issues 3
Electives ** 9

Fourth Year - Second Semester
Electives ** 15

** May be used to meet remaining General Education requirements in Human Values and Social Contexts, College B.A. requirements for 9 credits of upper level courses, or department requirements for 6 credits of cultural diversity/international perspective.

Mathematics and Statistics

Mathematicians and those with mathematical inclination are inherently problem solvers. Through course work and individual faculty-student work, the Department of Mathematics and Statistics offers the mechanism to develop and refine problem solving skills and creative thinking skills that are so important to meeting the demands of the job market and society in general. The core courses in the BA program provide basic mathematical tools. Diversity in upper level course offerings, combined with one or more interdisciplinary concentrations, gives students considerable versatility on their career paths.

Departmental Notes:

The Department of Mathematics maintains a "laboratory" in 116 Neville Hall where students enrolled in lower division mathematics courses can come to get supplementary help with their homework assignments. The laboratory is open weekdays from 9:00 AM to 4:00 PM and Monday through Thursday evenings from 7:00 PM to 10:00 PM during the academic year. Faculty, graduate assistants, and junior and senior mathematics majors staff the laboratory. The laboratory is also equipped with computers and resident mathematical software.

The Bachelor of Arts in Mathematics

Required courses for the BA in mathematics are divided into:

- Core mathematics courses
- Upper level mathematics area of concentration
- Outside specialization

A student must receive a grade of at least C in a course in order to receive credit toward meeting the requirements for the major.

Core Mathematics Courses

First and Sophomore Years:

MAT 126 - Calculus I 4
MAT 127 - Calculus II 4
MAT 228 - Calculus III 4
MAT 261 - Introduction to Abstract Mathematics 3
MAT 262 - Linear Algebra 3

Junior and Senior Years:

MAT 401 - Capstone Seminar in Mathematics 3
MAT 425 - Introduction to Real Analysis I 3
MAT 434 - Introduction to Statistics 4
One of:
MAT 463 - Introduction to Abstract Algebra I 3
MAT 465 - Theory of Numbers 3
MAT 481 - Discrete Mathematics 3

Upper Level Mathematics Area of Concentration:

At least four other approved MAT courses, at least three of which must be at the 400 level or above. These courses should be chosen by the student in consultation with her/his advisor and they should form a coherent area of concentration. Some examples of areas of concentration are Pure Mathematics, Continuous Applied Mathematics, Discrete Applied Mathematics, Statistics and Mathematics Education. (12)

Total MAT Credits = 43.

Outside Specialization:

Each mathematics major must complete an 18-credit specialization or two 12-credit specializations of advisor-approved courses in areas outside of mathematics.

Suggested curriculum for the B.A. in Mathematics

First Year - First Semester

ENG 101 - College Composition 3
LAS 100 - Majoring in the Liberal Arts and Sciences 1
MAT 126 - Calculus I 4
Electives (Including courses for completing the University general education requirements) 7-10

First Year - Second Semester

MAT 127 - Calculus II 4
Electives (Including courses for completing the University general education requirements) 11-14

Second Year - First Semester

MAT 228 - Calculus III 4
MAT 261 - Introduction to Abstract Mathematics 3
Electives (Including courses for completing the University general education requirements and the College of Liberal Arts distribution requirement) 5-8

Second Year - Second Semester

MAT 262 - Linear Algebra 3
Electives (Including courses for completing the University general education requirements and the College of Liberal Arts and Sciences distribution requirement) 6-9
Outside specialization course. 3
and one of:
MAT 425 - Introduction to Real Analysis I 3
MAT 463 - Introduction to Abstract Algebra I 3
MAT 465 - Theory of Numbers 3
MAT 481 - Discrete Mathematics 3

Third Year - First Semester

MAT 425 - Introduction to Real Analysis I 3
one of:
MAT 463 - Introduction to Abstract Algebra I. 3
MAT 465 - Theory of Numbers. 3
MAT 481 - Discrete Mathematics. 3
and/or MAT 434 - Introduction to Statistics 4
Outside Specialization course 3
Electives (Including courses for completing the University general education requirements and the College of Liberal Arts and Sciences distribution requirement) 5-8

Third Year - Second Semester

One or two MAT courses for the upper-level Concentration 3-6
Outside Specialization course 3
Electives (Including courses for completing the University general education requirements and the College of Liberal Arts and Sciences distribution requirement) 6-9

Fourth Year - First Semester

One or two MAT courses for the upper-level Concentration 3-6
Outside Specialization course 3
Electives (Including courses for completing the University general education requirements and the College of Liberal Arts and Sciences distribution requirement) 5-8

Fourth Year - Second Semester

MAT 401 - Capstone Seminar in Mathematics 3
MAT course for the upper-level Concentration 3
Outside Specialization course 3
Electives (Including courses for completing the University general education requirements and the College of Liberal Arts and Sciences distribution requirement) 6-9

Five-year Program

The Department offers a five-year program which leads to both the bachelor's and master's degrees. Due to the alternate-year scheduling of our graduate courses, the program is designed so the student can take necessary graduate courses during his or her senior year. This is necessary if the student is to complete the requirements for the M.A. in one year of post-baccalaureate study. Contact the Department for further details.

Modern Languages

General Requirements:

1. Demonstration of listening comprehension, oral, reading, and writing proficiency (students who have not received at least a "B" in FRE 305 or 306, GER 205 or 206, or SPA 206 may be required to take a test in language skills).
2. Demonstration of comprehensive coverage of literature and civilization through successful completion of appropriate course work.

Special Requirements:

1. A minimum of 30 credits beyond the intermediate level, representing a combination of a Romance language and German.
2. A minimum of 12 credits above the intermediate level must be taken in each of the two languages and at least 18 credits must be in 400 series of courses, including MLC 499 Senior Project.

Music

Entrance Requirements for all Music Degree Programs:

In addition to meeting the University's admission standards, applicants must demonstrate musical ability in performance on their major instruments or voice before a jury of the music faculty. Before the University can review your application for admission, applicants must pass an audition. Space is limited in these majors and students need to apply and audition early. To ensure full consideration, please audition and apply no later than February 1st for Fall admission. Auditions are arranged through the Music Division office, where a listing of audition requirements for the various disciplines may be obtained. A student is considered a music major upon:

1. acceptance based upon audition and interview;
2. maintenance of grade point average consistent with college requirements, and;
3. enrollment for credit in courses appropriate to his/her level within music curriculum.

Because of the sequence of music courses and because of the extent of requirements for majors, it is necessary that in order for a student to "remain a music major in good standing," a student must be enrolled in all required courses, in consultation with their advisor. The expectation is that students "stay on track" and show consistency in preparation as well as attendance. Any student requesting "Special Student" status will warrant the fees associated with non-majors.

Applied Music Fees:

For music majors as well as non-majors a fee will be charged for private instruction. 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 Division, School of Performing Arts. Practice facilities are provided in the Class of 1944 Hall. The University provides, so far as possible, practice opportunities for students who take applied music for credit.

Courses in Applied Music

The Division of Music provides private instruction in instruments and voice:

- MUS 201 For Bachelor of Arts in Music and music minors, individual applied instrumental lessons or voice lessons after completing Principles of Singing. May be repeated for credit. Section number designates instrument or voice.
- MUS 210 For Music Education or Music Performance majors. Individual applied instrumental music lessons for the first four semesters. For voice majors this course number is for the third and fourth semesters of applied study. Repeated for credit until Junior Standing examination is passed. Section number designates instrument or voice.
- MUS 350 For Music Education majors. Individual applied instrumental or voice music lessons after having passed the Junior Standing examination. May be repeated for credit. Section number designates instrument or voice.
- MUS 450 For Music Performance majors. Individual applied instrumental or voice music lessons after having passed the Junior Standing examination. May be repeated for credit. Section number designated instrument or voice.

All music majors enrolled in applied music are required to enroll in MUS 100 (Recital Laboratory) each semester of study.

Bachelor of Arts in Music

This program is designed for the study of music within a strong liberal arts curriculum. It offers 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 non-performance centered careers (e.g. musicology, composition, music librarianship, radio and television, etc.). It does not qualify the graduate for certification as a public school music teacher.

Candidates for the degree must, before graduation, attain a level of performing ability equivalent to that required for the Junior Standing exam in the BM degree program. Requirements for this exam are set by each instrumental area. A senior project will be accomplished under the guidance of an assigned faculty member during the final semester of the senior year. This project (1 credit) will be chosen from one of the following areas: a research paper, an original composition, or a lecture/recital by special permission.

B.A. Music Requirements

MUH 201 - History of Western Music I	3
MUH 202 - History of Western Music II	3
MUL 200 - The Art of Listening to Music: Historical Survey-Laboratory	1
MUL 202 - The Art of Listening to Music: Historical Survey	3
MUS 498 - Senior Project	3
MUY 111 - Elementary Harmony I	2
MUY 112 - Elementary Harmony II	2
MUY 211 - Advanced Harmony I	2
MUY 212 - Advanced Harmony II	2
Choose 5 credits from the following six courses:	
MUY 310 - Jazz Improvisation	2
MUY 315 - Twentieth Century Musical Techniques	2
MUY 422 - Tonal Counterpoint	2
MUY 451 - Form and Analysis	3
MUY 452 - Orchestration	3
MUY 461 - Composition I (Small Forms)	2
Recital Laboratory (each semester of applied lessons)	0
Music Organizations (4 semesters -3 large ensemble, 1 small ensemble)	4
Music electives (theory or history beyond core requirements)	9
Piano proficiency (satisfied by exam or completion of piano class series	0
Applied Music Lessons	8
Foreign Language	6-8

Suggested curriculum for the B.A. in Music

First Year - First Semester

LAS 100 - Majoring in the Liberal Arts and Sciences	1
MUL 200 - The Art of Listening to Music: Historical Survey-Laboratory	1
MUL 202 - The Art of Listening to Music: Historical Survey	3
MUY 111 - Elementary Harmony I	2
Applied Music Lessons.	1
Recital Laboratory	0
Music Organization	1
Language	3-4
General Education or college requirements	3-4

First Year - Second Semester

MUY 112 - Elementary Harmony II	2
Applied Music Lessons.	1
Recital Laboratory	0
Music Organization	1
Language	3-4
General Education or college requirements	6-8

Second Year - First Semester

MUH 201 - History of Western Music I	3
MUY 211 - Advanced Harmony I	2
Applied Music Lessons.	1
Recital Laboratory	0
Music Organization	1
General Education or college requirements	6-9

Second Year - Second Semester

MUH 202 - History of Western Music II	3
MUY 212 - Advanced Harmony II	2
Applied Music Lessons.	1
Recital Laboratory	0
Music Organization	1
General Education or college requirements	6-9

Third Year - First Semester
MUY 3XX or 4XX 2-3
Applied Music Lessons 1
Recital Laboratory 0
Music Organization 1
General Education or college requirements 9

Third Year - Second Semester
MUY 3XX or 4XX. 2-3
Applied Music Lessons. 1
Recital Laboratory. 0
Music Organization. 1
General Education or college requirements 12

Fourth Year - First Semester
Applied Music Lessons. 1
Recital Laboratory. 0
Music Organization. 1
Music Elective. 3
General Education or college requirements 12

Fourth Year - Second Semester
Applied Music Lessons. 1
Music Organization. 1
Recital Laboratory. 0
Senior Project 3
General Education or college requirements 12-15

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. All students elect an instrumental specialization or a vocal specialization, however, a double specialization (instrumental/vocal) is available, to be noted on student's transcript, for B.M. Education majors. All music education students must pass a piano proficiency examination before graduation.

Bachelor of Music in Music Education (8 credits required):

Instrumental Concentration:

1. Five credits in any large instrumental ensemble-credit in both the marching and jazz areas is strongly recommended.
2. Two credits in any vocal or instrumental ensemble—small ensemble credit is strongly recommended.
3. One credit in a large vocal ensemble.

Vocal Concentration:

1. Five credits in University Singers, Oratorio Society or Collegiate Chorale.
2. Two credits in any vocal or instrumental ensemble— small ensemble credit is strongly recommended.
3. One credit in a large instrumental ensemble or lab band, MUE 403.

Keyboard and Guitar Concentrations:
Follow requirements for either vocal or instrumental concentration.

See Music Division Undergraduate Handbook for a list of large and small ensembles.

Suggested curriculum for the B.M. in Music Education

Area of Specialization: Piano, with an Instrumental Track

First Year - First Semester
LAS 100 - Majoring in the Liberal Arts and Sciences 1
MUL 200 - The Art of Listening to Music: Historical Survey-Laboratory 1
MUL 202 - The Art of Listening to Music: Historical Survey 3
MUO XXX Ensemble(s) 1-2
MUS 100 - Recital Lab
MUS 210 - Applied Music Lessons 2
MUS 316 - Piano Literature I 1
MUY 111 - Elementary Harmony I 2
MUY 113 - Elementary Sight Singing and Ear Training I 2
General Education Requirement 6

First Year - Second Semester
MUE 207 - Voice Class 1
MUE 215 - Early Music Teaching Field Experience 2
MUO XXX Ensemble(s) 1-2
MUS 100 - Recital Lab
MUS 210 - Applied Music Lessons 2
MUS 318 - Piano Literature II 1
MUY 112 - Elementary Harmony II 2
MUY 114 - Elementary Sight Singing and Ear Training II 2
General Education Requirement 9

Second Year - First Semester
EDB 202 - Schools, Students, and Society 3
MUE 209 - String Class 2
MUE 210 - Introduction to Music Education 2
MUE 213 - Woodwinds I 1
MUH 201 - History of Western Music I 3
MUO XXX Ensemble 1-2
MUP 251 - Accompanying I 1
MUS 100 - Recital Lab 0
MUS 210 - Applied Music Lessons 2
MUY 211 - Advanced Harmony I 2
MUY 213 - Advanced Sight Singing and Ear Training I 2

Second Year - Second Semester
EDB 221 - Educational Psychology 3
MUE 214 - Woodwinds II 1
MUE 217 - Brass Class 2
MUH 202 - History of Western Music II 3
MUO 109 - Collegiate Chorale 1
(or other choral ensemble)
MUO XXX Ensemble(s) 1-2
MUP 252 - Accompanying II 1
MUS 100 - Recital Lab
MUS 210 - Applied Music Lessons 2
MUY 212 - Advanced Harmony II 2
MUY 214 - Advanced Sight Singing and Ear Training II 2

Third Year - First Semester
MUE 320 - Teaching of General Music: Elementary 3
MUE 403 - Instrumental Laboratory 1
MUO XXX Ensemble(s) 1-2
MUP 340 - Basic Conducting 2
MUP 405 - Keyboard Musicianship 2
MUS 100 - Recital Lab
MUS 312 - Piano Pedagogy I 1
MUS 350 - Applied Music Lessons 2
MUY XXX Music Theory 2-3
General Education Requirements 3

Third Year - Second Semester
MUE 222 - Percussion Class 2
MUE 321 - Teaching of General Music: Secondary 3
MUO XXX - Ensemble(s) 1-2
MUP 345 - Instrumental Conducting and Literature 3
MUS 100 - Recital Lab
MUS 314 - Piano Pedagogy II 1
MUS 350 - Applied Music Lessons 2
MUY 452 - Orchestration 3
General Education Requirement 3

Fourth Year - First Semester
MUE 401 - Organization and Development of the Instrumental Music Program 3
MUO XXX Ensemble(s) 1-2
SED 402 - Adapting Instruction for Students with Disabilities 3
General Education Requirement 9

Fourth Year - Fourth Semester
STT 494 - Student Teaching K-12 (Art or Music) 1-12

Suggested curriculum for the B.M. in Music Education

Area of Specialization: Piano, with a Voice Track

First Year - First Semester
LAS 100 - Majoring in the Liberal Arts and Sciences 1
MUE 207 - Voice Class 1

MUL 200 - The Art of Listening to Music: Historical Survey-Laboratory 1
MUL 202 - The Art of Listening to Music: Historical Survey 3
MUO XXX - Ensemble(s) 1-2
MUS 100 - Recital Lab
MUS 210 - Applied Music Lessons 2
MUS 316 - Piano Literature I 1
MUY 111 - Elementary Harmony I 2
MUY 113 - Elementary Sight Singing and Ear Training I 2
General Education Requirement. 3

First Year - Second Semester
MUS 100 - Recital Lab
MUS 201 - Applied Music Lessons 1
MUS 210 - Applied Music Lessons 2
MUS 318 - Piano Literature II 1
MUO XXX - Ensemble(s). 1-2
MUY 112 - Elementary Harmony II 2
MUY 114 - Elementary Sight Singing and Ear Training II 2
General Education Requirement 9

Second Year - First Semester
EDB 202 - Schools, Students, and Society 3
MUE 209 - String Class 2
or MUE 217 - Brass Class 2
or MUE 222 - Percussion Class 2
or both
MUE 213 - Woodwinds I. 1
MUE 214 - Woodwinds II. 1
MUE 210 - Introduction to Music Education 2
MUH 201 - History of Western Music I 3
MUO XXX - Ensemble(s) 1-2
MUP 251 - Accompanying I 1
MUS 201 - Applied Music Lessons 1
MUS 210 - Applied Music Lessons 2
MUY 211 - Advanced Harmony I 2
MUY 213 - Advanced Sight Singing and Ear Training I 2

Second Year - Second Semester
EDB 221 - Educational Psychology 3
MUE 215 - Early Music Teaching Field Experience 2
MUH 202 - History of Western Music II 3
MUP 252 - Accompanying II 1
MUS 100 - Recital Lab
MUO XXX - Ensemble(s) 1-2
MUS 201 - Applied Music Lessons 1
MUS 210 - Applied Music Lessons 2
MUY 212 - Advanced Harmony II 2
MUY 214 - Advanced Sight Singing and Ear Training II 2

Third Year - First Semester
MUE 320 - Teaching of General Music: Elementary 3
MUO XXX - Ensemble(s) 1-2
MUP 340 - Basic Conducting 2
MUP 405 - Keyboard Musicianship 2
MUS 100 - Recital Lab
MUS 312 - Piano Pedagogy I 1
MUS 350 - Applied Music Lessons 2
General Education Requirement 3
MUY XXX - Music Theory 2-3

Third Year - Second Semester
MUE 321 - Teaching of General Music: Secondary 3
MUO XXX - Ensemble(s) 1-2
MUP 341 - Choral Conducting and Literature 3
MUS 100 - Recital Lab
MUS 314 - Piano Pedagogy II 1
MUS 350 - Applied Music Lessons 2
SED 402 - Adapting Instruction for Students with Disabilities 3
General Education Requirement 3

Fourth Year - First Semester
MUE 400 - Choral Music Education 3
MUS Elective 5
General Education Requirement 9
MUO XXX - Ensemble(s) 1-2

Fourth Year - Second Semester
STT 494 - Student Teaching K-12 (Art or Music) 1-12

Suggested curriculum for the B.M. in Music Education

Area of Specialization: Instrumental

First Year - First Semester
LAS 100 - Majoring in the Liberal Arts and Sciences 1
MUL 200 - The Art of Listening to Music: Historical Survey-Laboratory 1
MUL 202 - The Art of Listening to Music: Historical Survey 3
MUO XXX - Ensemble(s) 1-2
MUP 205 - Piano Class I 1
MUS 100 - Recital Lab
MUS 210 - Applied Music Lessons 2
MUY 111 - Elementary Harmony I 2
MUY 113 - Elementary Sight Singing and Ear Training I 2
General Education Requirement 6

First Year - Second Semester
MUE 215 - Early Music Teaching Field Experience 2
MUO XXX - Ensemble(s) 1-2
MUP 206 - Piano Class II 1
MUS 100 - Recital Lab
MUS 210 - Applied Music Lessons 2
MUY 112 - Elementary Harmony II 2
MUY 114 - Elementary Sight Singing and Ear Training II 2
General Education Requirement 9

Second Year - First Semester
EDB 202 - Schools, Students, and Society 3
MUE 210 - Introduction to Music Education 2
MUE 213 - Woodwinds I 1
MUH 201 - History of Western Music I 3
MUO XXX - Ensemble(s) 1-2
MUP 215 - Piano Class I 1
MUS 100 - Recital Lab
MUS 210 - Applied Music Lessons 2
MUY 211 - Advanced Harmony I 2
MUY 213 - Advanced Sight Singing and Ear Training I 2

Second Year - Second Semester
EDB 221 - Educational Psychology 3
MUE 214 - Woodwinds II 1
MUE 217 - Brass Class 2
MUH 202 - History of Western Music II 3
MUO XXX - Ensemble(s). 1-2
MUP 216 - Piano Class II 1
MUS 100 - Recital Lab
MUS 210 - Applied Music Lessons 2
MUY 212 - Advanced Harmony II 2
MUY 214 - Advanced Sight Singing and Ear Training II 2

Third Year - First Semester
MUE 207 - Voice Class 1
MUE 209 - String Class 2
MUE 320 - Teaching of General Music: Elementary 3
MUE 403 - Instrumental Laboratory 1
MUO XXX - Ensemble(s) 1-2
MUP 340 - Basic Conducting 2
MUS 100 - Recital Lab
MUS 350 - Applied Music Lessons 2
General Education Requirement 3
MUY XXX - Music Theory 3

Third Year - Second Semester
MUE 222 - Percussion Class 2
MUO 109 - Collegiate Chorale 1
MUO XXX - Ensemble(s) 1-2
or other choral ensemble
MUP 345 - Instrumental Conducting and Literature 3
MUS 100 - Recital Lab
MUS 350 - Applied Music Lessons 2
MUY 452 - Orchestration 3
General Education Requirement 3

Fourth Year - First Semester
MUE 401 - Organization and Development of the Instrumental Music Program 3
MUS Elective 2
MUO XXX - Ensemble(s) 1-2
SED 402 - Adapting Instruction for Students with Disabilities 3
General Education Requirement 9

Fourth Year - Second Semester
STT 494 - Student Teaching K-12 (Art or Music) 1-12

Suggested curriculum for the B.M. in Music Education

Area of Specialization: Voice

First Year - First Semester
LAS 100 - Majoring in the Liberal Arts and Sciences 1

MUL 200 - The Art of Listening to Music: Historical Survey-Laboratory 1
MUL 202 - The Art of Listening to Music: Historical Survey 3
MUO XXX - Ensemble(s) 1-2
MUP 205 - Piano Class I 1
MUS 100 - Recital Lab
MUS 121 - Principles of Singing I 3
MUY 111 - Elementary Harmony I 2
MUY 113 - Elementary Sight Singing and Ear Training I 2
General Education Requirement 3

First Year - Second Semester
MUP 206 - Piano Class II 1
MUO XXX - Ensemble(s) 1-2
MUS 100 - Recital Lab
MUS 122 - Principles of Singing II 3
MUY 112 - Elementary Harmony II 2
MUY 114 - Elementary Sight Singing and Ear Training II 2
General Education Requirement 9

Second Year - First Semester
EDB 202 - Schools, Students, and Society 3
MUE 210 - Introduction to Music Education 2
MUH 201 - History of Western Music I 3
MUO XXX - Ensemble(s) 1-2
MUP 215 - Piano Class I 1
MUS 100 - Recital Lab
MUS 210 - Applied Music Lessons 2
MUY 211 - Advanced Harmony I 2
MUY 213 - Advanced Sight Singing and Ear Training I 2
General Education Requirement 3

Second Year - Second Semester
EDB 221 - Educational Psychology 3
MUE 215 - Early Music Teaching Field Experience 2
MUH 202 - History of Western Music II 3
MUO XXX - Ensemble(s) 1-2
MUP 216 - Piano Class II 1
MUS 100 - Recital Lab
MUS 210 - Applied Music Lessons 2
MUY 212 - Advanced Harmony II 2
MUY 214 - Advanced Sight Singing and Ear Training II 2
SED 402 - Adapting Instruction for Students with Disabilities 3

Third Year - First Semester
MUE 209 - String Class 2
or MUE 213 - Woodwinds I 1
and
MUE 214 - Woodwinds II 1
or MUE 217 - Brass Class 2
or MUE 222 - Percussion Class 2
MUE 320 - Teaching of General Music: Elementary 3
MUO XXX - Ensemble(s) 1-2
MUP 340 - Basic Conducting 2
MUP 405 - Keyboard Musicianship 2
MUS 100 - Recital Lab
MUS 350 - Applied Music Lessons 2
General Education Requirement 3
MUY XXX - Music Theory 2-3

Third Year - Second Semester
MUE 321 - Teaching of General Music: Secondary 3
MUP 341 - Choral Conducting and Literature 3
MUS 100 - Recital Lab
MUS 350 - Applied Music Lessons 2
MUY 452 - Orchestration 3
General Education Requirement 3

Fourth Year - First Semester
MUE 400 - Choral Music Education 3
MUS elective 8
General Education Requirement 6
MUO XXX - Ensemble(s) 1-2

Fourth Year - Second Semester
STT 494 - Student Teaching K-12 (Art or Music) 1-12

Music Performance

The Bachelor of Music in Performance is designed to assist the music student to prepare for a career in music performance. This degree is offered for the following applied areas: standard orchestral and band instruments, piano, voice and pipe organ. Emphasis is placed on performance; studies in music theory, music history, and the liberal arts are also included. Graduation requirements include appropriate proficiency in playing or singing a substantial and varied 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.

Music Theory:
Elementary Harmony, Sight Singing and Ear Training (MUY 111, 112, 113, 114) 8
Advanced Harmony, Sight Singing and Ear Training (MUY 211, 212, 213, 214) 8
Music Theory Electives selected from MUY 300 and above course 5

Music History:
Survey of Music Literature (MUL 200, 202) 4
History of Music (MUH 201, 202) 6
Music History electives selected from: 6
MUH courses above the 300-level
or HTY 484 (History of Jazz)
or MUS 510 courses as approved by the Music History Faculty,
or WST 201 Topics in Women's Studies: Women and Music

Performance Major:
MUS 100 Recital Laboratory for Each semester of applied lessons
First and second levels (MUS 210) (Vocal majors take MUS 121, 122)
Third level and fourth levels (MUS 450) (after passing Junior Standing examination)

Note: all performance majors including piano majors must pass a piano proficiency examination, or pass the fourth semester of class piano.

Bachelor of Music in Performance:
1. Four credits in a large ensemble, performing in your major instrument (Piano and guitar majors may choose 8 credits in small ensembles)
2. Four credits in a small ensemble (major instrument or voice)
3. One credit on a secondary instrument/ voice may be substituted with the consent of the applied instructor in both areas.

See the Music Division Undergraduate Handbook for a list of large and small ensembles.

Piano Majors:
MUP 251 - Accompanying I 1
MUP 252 - Accompanying II 1
MUS 312 - Piano Pedagogy I 1
MUS 314 - Piano Pedagogy II 1
MUS 316 - Piano Literature I 1
MUS 318 - Piano Literature II 1

Voice Majors:
MUS 310 - Voice Pedagogy/Literature 1-2
THE 302 - Movement Training for Actors 3
THE or DAN Electives 6

Basic Conducting (all majors):
MUP 340 - Basic Conducting 2

Electives:
Electives should be chosen to meet General Education requirements. ARH 155 and THE 461 are recommended, and one year of foreign language is required for voice majors.

New Media

The New Media Program at the University of Maine offers an interdisciplinary course of study in the systems, technologies, history, art, design, and theory of information artifacts and networks. The curriculum enables students to investigate the creative and applied processes essential to this area of study. It prepares students to be technologically capable innovators, articulate thinkers, and creative new media developers.

Today, information is becoming fluid, continuous, and instantly accessible, which has caused a shift in the ways that we create, understand, and distribute information. Information networks are reconfiguring the

forms of human relationship, collaboration, and communication. The advent and convergence of new ideas, technologies, and information systems has also rekindled the relationship of applied and creative arts and sciences. This renewed bond presents new collaborative opportunities for artists, scientists, communicators, and other creative thinkers. Our program provides an interdisciplinary, experiential approach to learning that emphasizes creativity, critical thinking, teamwork, and entrepreneurship.

UMaine New Media is taught by a core faculty with expertise in art, graphic design, computer science, engineering, cultural studies, creative writing, and journalism. Cooperating professors from fine art, computer science, music, psychology and English add further dimensions.

All first-year majors share a common experience studying applied process and theory. In subsequent years, majors focus on one of the following three areas of concentration:

Information Design — The study of content creation and design, including digital photography, audio and video, interface design and interactivity.

Information Culture — The study of the origins, history, philosophy, ethics and criticism of new media.

Information Systems and Technologies — The study of technologies that underpin new media, such as networking, programming, and database design.

From time to time students from each area of concentration are brought together in courses that explore the collaborative process. A two-part, six-credit senior capstone experience completes the BA. Here, students from each concentration design and produce advanced projects that incorporate such media as Web sites; animated, feature or documentary videos; open source code banks; social, cultural and creative networks; experimental narratives; and interactive games.

New Media majors are encouraged to complete a minor in another field. New Media students also may apply to work in the New Media and Internet Technologies Lab. This is a collaborative environment that designs and produces sophisticated prototypes and projects ranging from Web sites and interactive CD-ROMs to kiosks and video documentaries.

Each New Media major is encouraged to provide his or her own personal laptop computer capable of performing essential functions that are taught in core New Media courses. Purchase of additional hardware and software may be necessary depending on the student's specialized interests. Minimum specifications for new media computers are available by writing or calling the New Media program office, 426 Chadbourne Hall, (207) 581-4358.

Requirements

New Media majors must complete a total of 39 core and elective credits. COS 120 - Visual Basic and ENG 317 - Technical Writing are outside-the-major requirements.

Core courses include:

NMD 100 - Introduction to New Media 3
NMD 102 - Fundamentals of Information Systems 3
NMD 104 - Design Basics for New Media 3
NMD 202 - Dynamic Web Site Development 3
(required of Information Systems track majors)
NMD 204 - Design Synectics 3
(required of Information Design track majors)
NMD 206 - Project Design Lab: I 3
NMD 213 - Information Ethics 3
(required of Information Culture track majors)
NMD 300 - Seminar in Information Culture and Theory 3
(required of Information Culture track majors)
NMD 302 - Interactive Web Development 3
(required of Information Systems track majors)
NMD 304 - Explorations In Time Based Design 3
(required of Information Design track majors)
NMD 306 - Project Design Lab: II 3
NMD 498 - Practicum in New Media I 3
NMD 499 - Practicum in New Media II 3

New Media electives include:

NMD 112 - Using Geographic Information Systems 3
NMD 240 - Introduction to Web Concepts and Design 3
NMD 250 - Digital Music 3
NMD 270 - Digital Art I 3
NMD 295 - Topics in New Media 1-3
Digital Publication Design and Recording Arts
NMD 340 - Intermediate Web Concepts and Design 3
NMD 360 - Perceptual Applications and Connections 3
NMD 362 - Photographic Reporting and Storytelling 3
NMD 370 - Digital Art IIA: 3D Modeling and Animation 3
NMD 371 - Digital Art IIB: Digital Video 3
NMD 372 - Digital Art IIC: Interactivity 3
NMD 398 - Topics in New Media 1-3
NMD 417 - Advanced Professional Writing 3
NMD 430 - Topics in New Media 1-3
NMD 490 - Independent Study in New Media 3

New Media students also may select from a number of courses in art, business, communication and journalism, computer science, English, sociology, and other areas that fulfill new media elective requirements.

Philosophy

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 Bachelor of Arts in Philosophy

Requirements:

1. A minimum of 30 credits in philosophy
2. At least 21 credits (seven courses) in philosophy must be upper level courses, i.e., courses above the 100 level;
3. PHI 200
4. Three credits in logic: PHI 103 or PHI 250
5. Nine credits in History of Philosophy including PHI 210, PHI 312 and one of the following: PHI 286, PHI 287, PHI 317, PHI 342, PHI 343, PHI 420
6. PHI 475 Junior/Senior Philosophy Seminar
7. A minimum grade of "C-" for courses to count toward the major.

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.

A Typical Four-year Program in Philosophy

First Year
Two 100-level philosophy courses

Second Year
PHI 200 - Problems in Recent Philosophy 3
PHI 210 - History of Ancient Philosophy 3
PHI 312 - History of Modern Philosophy 3

Third Year
Two or three upper level philosophy courses, possibly including PHI 475

Fourth Year
Two or three upper level philosophy courses, including PHI 475 (if not taken in Junior Year)

Physics and Astronomy

The Department of Physics and Astronomy offers programs of study in the College of Liberal Arts and Sciences that lead to the degrees of Bachelor of Science in Physics and Bachelor of Arts in Physics. The BS degree is customarily the prerequisite for graduate education in physics, astronomy or related areas, preparatory for careers in basic or applied research and development. The BS degree places a strong emphasis on physics and mathematics. The BA degree in physics is a traditional liberal arts program emphasizing physics together with a substantial distribution of course work outside the areas of science and mathematics. The BA degree, in addition to preparing the student for an entry level position in industry, can accommodate pre-medical preparation, secondary science education certification, pre-law and technical writing careers, to name only a few.

The Department also offers a Bachelor of Science in Engineering Physics in the College of Engineering. This BS degree is designed for students who are interested in both a particular engineering field and the physics and mathematics that provide a foundation for that field. This program is described under Engineering Physics in the College of Engineering section of this catalog.

Physics and Cooperative Education

Physics majors in good standing who have completed 18 credits in physics may participate in the 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 a professional environment at a job selected by mutual agreement with the student, employer and the Cooperative Education Coordinator in the Department of Physics and Astronomy. Academic credit is received through enrollment in PHY 496, Field Experience in Physics.

The Bachelor of Arts in Physics

Requirements:

The B.A. degree in physics requires a minimum of 35 credits in physics, CHY 121/123, ENG 101and 15 credits in mathematics. The 35 credits in physics must include PHY 121 and PHY 122 (or PHY 111 and PHY 112), PHY 223, PHY 229, PHY 230, PHY 236, PHY 238, PHY 441 and/or PHY 442, PHY 454, PHY 488 and PHY 489. It must also include at least three 400-level courses chosen from AST 451, PHY 447, PHY 455, PHY 462, PHY 463, PHY 469, PHY 470, PHY 472, and PHY 480. The 15 credits in mathematics must include MAT 126, MAT 127, MAT 228 and MAT 259 or their equivalents. First-year students must also take LAS 100.

The student must include among elective courses those needed to satisfy the University's General Education requirements and the College of Liberal Arts and Sciences B.A. requirements.

A student preparing for graduate work in physics is advised to take some or all of the following electives in his or her junior or senior year: PHY 462, Physical Thermodynamics; PHY 463, Statistical Mechanics; PHY 470, Nuclear Physics ; PHY 480, Physics of Materials; as well as additional courses in mathematics.

Suggested curriculum for the B.A. in Physics

First Year - First Semester

ENG 101 - College Composition	3
LAS 100 - Majoring in the Liberal Arts and Sciences	1
MAT 126 - Calculus I	4
PHY 111 - General Physics I	4
or PHY 121 - Physics for Engineers and Physical Scientists I	4
Elective	3

First Year - Second Semester

MAT 127 - Calculus II	4
PHY 112 - General Physics II	4
or PHY 122 - Physics for Engineers and Physical Scientists II	4
Electives	7

Second Year - First Semester

CHY 121 - Introduction to Chemistry	3
MAT 228 - Calculus III	4
PHY 229 - Physical Measurements Laboratory I	2
PHY 236 - Introductory Quantum Physics	3

Second Year - Second Semester

MAT 259 - Differential Equations	3
PHY 223 - Special Relativity	1
PHY 230 - Physical Measurements Laboratory II	2
PHY 238 - Mechanics	3
Electives	6

Third Year - First Semester

PHY 441 - Physical Electronics Laboratory	2
PHY 454 - Electricity and Magnetism I	3
Electives	7

Third Year - Second Semester

PHY 442 - Modern Experimental Physics	2
PHY 455 - Electricity and Magnetism II	3
PHY 472 - Geometrical and Fourier Optics	3
PHY 473 - Modern Optics Laboratory	1-2
Electives	6

Fourth Year - First Semester

PHY 469 - Quantum and Atomic Physics	3
PHY 481 - Project Laboratory in Physics I	3
PHY 488 - Physics Seminar I	1
Electives	9

Fourth Year - Second Semester

PHY 489 - Physics Seminar II	1
Electives	15

The Bachelor of Science in Physics

Requirements:

The B.S. degree requires a minimum of 50 credits of physics (9 of which are elective), 21 credits of mathematics (3 of which are elective) and 10 credits of approved science and computer sciences courses (3 of which are elective). In addition, the student must take LAS 100, ENG 101, and 36 credits of additional electives (18 of which satisfy the minimum credits to satisfy the University's General Education requirements) for an overall total of 120 credits. The mathematics elective must be chosen from MAT 262, MAT 332, MAT 434, MAT 452, MAT 454, MAT 459, MAT 471 or other approved course. PHY 574 may be used here, provided it is not also used as a physics elective. The three physics electives must be chosen from AST 451, PHY 447, PHY 462, PHY 470, PHY 471, PHY 472, PHY 473, PHY 480, PHY 482.

The student must include among elective courses those courses needed to satisfy the University's General Education requirements.

Suggested curriculum for the B.S. in Physics

First Year - First Semester

ENG 101 - College Composition	3
LAS 100 - Majoring in the Liberal Arts and Sciences	1
MAT 126 - Calculus I	4
PHY 121 - Physics for Engineers and Physical Scientists I	4
Human Values/Social Context Elective I	3

First Year - Second Semester

COS 220 - Introduction to Computer Science I	3
MAT 127 - Calculus II	4

PHY 122 - Physics for Engineers and Physical Scientists II 4
Human Values/Social Context Elective II 3

Second Year - First Semester
CHY 121 - Introduction to Chemistry 3
MAT 228 - Calculus III 4
PHY 229 - Physical Measurements Laboratory I 2
PHY 236 - Introductory Quantum Physics 3
Human Values/Social Context and Ethics Elective III 3

Second Year - Second Semester
MAT 259 - Differential Equations 3
PHY 223 - Special Relativity 1
PHY 230 - Physical Measurements Laboratory II 2
PHY 238 - Mechanics 3
Science Elective [1] 3
Human Values/Social Context and Ethics IV 3

Third Year - First Semester
PHY 441 - Physical Electronics Laboratory 2
PHY 454 - Electricity and Magnetism I 3
Human Values/Social Context and Ethics Elecive V 3
Elective 3

Third Year - Second Semester
PHY 442 - Modern Experimental Physics 2
PHY 455 - Electricity and Magnetism II 3
Physics Elective I 3
Elective 3
Mathematics Elective 3

Fourth Year - First Semester
PHY 469 - Quantum and Atomic Physics 3
PHY 481 - Project Laboratory in Physics I 3
PHY 488 - Physics Seminar I 1
Physics Elective II 3
Electives 6

Fourth Year - Second Semester
PHY 463 - Statistical Mechanics 3
PHY 489 - Physics Seminar II 1
Physics Elective III 3
Human Values/Social Context and Ethics Elective VI 3
Electives 6

[1]Approved science elective must be from a discipline other than AST, COS, MAT or PHY

Political Science

Political Science examines the nature of politics from diverse perspectives. The requirements for majors in the department teach students to think critically about thg fundamental theories, principles,"institutions, and practices of politics in their social and historical contexts. Course work in the department is required in four main sub-fields of the discipline of political science - American Politics, International Relations, Comparative Politics, and Political Theory - so that students will acquire the knowledge and skills for further study in law school or graduate school, or will be prepared for careers in public service or related fields. Opportunities for internships and for independent study with faculty are numerous. The department encourages its students to pursue related work in the humanities and social sciences so that their political studies fall within the context of a liberal arts education.

Departmental Note:

Entrance Requirements: A minimum grade point average of 2.0 at the time of entrance.

Major Requirements:

- POS 100, American Government.
- A minimum of 36 credits in POS courses with grades of "C" (2.0) or better. The 36 credits must be distributed as follows and at least 21 of the 36 credits must be at the 300, 400, or 500-level:
  - American Politics 6
  - International Relations 6
  - Comparative Politics 6
  - Political Theory 6
  - POS Electives (POS 100 may be used as an elective) 12

Majors within the department may not receive more than a total of 12 credits toward graduation for any combination of internships and field experience, and not more than 6 credits may be used toward the departmental major. A field supervisor normally participates in the evaluation of an internship or field experience course.

American Politics:
Three credits of an internship or field experience course related to American Politics may be used toward satisfying this sub-field requirement.

POS 203 - American State and Local Government 3
POS 282 - Introduction to American Law 3
POS 352 - American Public Opinion 3
POS 359 - Topics in American Government 3
POS 362 - Maine Government 3
POS 381 - Political Parties and Elections 3
POS 383 - American Constitutional Law 3
POS 384 - American Civil Liberties 3
POS 385 - Women and Politics 3
POS 450 - Mass Media in U.S. Politics 3
POS 451 - The American Congress 3
POS 454 - The U.S. Presidency 3

International Relations:
Three credits of an internship or field experience course related to International Relations may be used toward satisfying this sub-field requirement.

INA 201 - Topics in International Affairs 3
POS 120 - Introduction to World Politics 3
POS 273 - International Relations 3
POS 372 - Canadian Foreign Policy 3
POS 374 - American Foreign Policy 3
POS 377 - International Law 3
POS 469 - Politics of the Middle East 3
POS 474 - Instruments of American Foreign Policy Making 3
POS 475 - International Security 3
POS 476 - Seminar in World Politics 3

Comparative Politics:
POS 241 - Introduction to Comparative Politics 3
POS 243 - Canadian Government and Politics 3
POS 335 - Major Governments of Western Europe 3
POS 336 - Government and Politics in Russia 3
POS 337 - Government and Politics in Eurasia 3
POS 344 - Public Policy in Canada 3
POS 531 - Topics in Comparative Politics 3

Political Theory:
POS 201 - Introduction to Political Theory 3
POS 301 - Classical Political Thought 3
POS 302 - Medieval Political Thought 3
POS 303 - Early Modern Political Thought 3
POS 304 - American Political Thought 3
POS 305 - Late Modern Political Thought 3
POS 401 - Seminar in Political Theory 3

Internship and Independent Study Courses:
INT 494 - (PAA, POS) Field Experience Ar
POS 493 - American Politics Internship 3 or 6
POS 495 - Congressional Internship 6 or 9
POS 496 - International Affairs Internship 6 or 9
POS 498 - Independent Study in Political Science 3

Capstone Course:
POS 499 - Senior Seminar in Political Science 3

Suggested curriculum for the B.A. in Political Science

First Year - First Semester

ENG 101 - College Composition	3
LAS 100 - Majoring in the Liberal Arts and Sciences	1
POS 100 - American Government	3
General Education: Mathematics	3
Elective	3
General Education: Westen Cultural Tradition	3

First Year - Second Semester

POS 120 - Introduction to World Politics	3
POS 241 - Introduction to Comparative Politics	3
General Education: Science	3
Elective	3
General Education: Social Context and Institutions	3

Second Year - First Semester

POS 201 - Introduction to Political Theory	3
POS 282 - Introduction to American Law	3
or POS 359 - Topics in American Government	3
General Education: Mathematics	3
General Education: Cultural Diversity and International Perspectives	3
Elective	3

Second Year - Second Semester

POS 243 - Canadian Government and Politics	3
or POS 344 - Public Policy in Canada	
POS 273 - International Relations	3
or POS 372 - Canadian Foreign Policy	
or POS 374 - American Foreign Policy	
POS 344 - Public Policy in Canada	3
POS 372 - Canadian Foreign Policy	3
POS 374 - American Foreign Policy	3
General Education: Writing Intensive	3
General Education: Population and the Environment	3
General Education: Science	3

Third Year - First Semester

POS Upper level American	3
POS Upper level theory	3
General Education: Artistic and Creative Expression	3
BA Upper level requirement	3
Elective	3

Third Year - Second Semester

POS Upper level international	3
POS Upper level comparative	3
General Education: Human Values and Social Context	3
BA Upper level requirement	3
Elective	3

Fourth Year - First Semester

POS 499 - Senior Seminar in Political Science	3
POS Upper level elective	3
Electives	6
BA Upper level requirement	3

Fourth Year - Second Semester

POS Upper level electives	6
Elective	9

Psychology

The Depertment of Psychology offers students the opportunity to gain an understanding of the many diverse and fascinating aspects of human behavior through instruction that is designed to acquaint students with psychology as a biological science and as a social science. Students majoring in psychology learn how behavior develops in childhood and in adolescence, how individuals perceive the world around them, how we think and remember, and how we interact with other people.

In terms of curriculum, the department offers courses that introduce the student to psychological theory, methodology, research findings, and applications of psychological principles. A complete selection of traditional course offerings are provided, as well as a number of original courses such as Infant Development, Health Psychology, Decision Making, and Foundations of Clinical Psychology. The department operates it's own preschool, the Child Study Center, and through our Child Study Laboratory courses, students observe and interact with children in a natural environment and then relate these observations to material discussed in course texts and articles. The broad curriculum is designed to give majors exposure to many of the diverse areas of the field. In addition to the classroom courses, students can take Problems in Psychology, an individualized study course, where they work closely with faculty on research projects in areas such as depression, phobic behavior, risk-taking, children's peer relationships, aging and creativity. Students may also take Field Experience in Psychology, where they earn credit for on-the-job experience in the community, working in mental health facilities, half-way houses, and other facilities involved in activities related to psychology.

The Bachelor of Arts in Psychology

1. Students must have a GPA of 2.0 or better to declare a major in Psychology.
2. A minimum of 34 credits in psychology courses (Note: 48 credits in psychology is the maximum amount of credit that will count toward the 120 credits needed to graduate.)
3. Required courses must be passed with a grade of "C-" or better.
4. Majors must accumulate a minimum grade point average of 2.0 in PSY courses.
5. No more than six credits of PSY 492, Problems in Psychology, may count toward the 34 credits required.
6. No more than three credits of PSY 493, Field Experience may count toward the 34 credits required.
7. Students who transfer from other institutions must take a minimum of 24 credits within the department and the department must approve all transfer courses applied to the major.
8. Psychology majors planning on attending graduate school in psychology are encouraged to consider the Research Intensive track within the major. In addition to the regular major requirements, students in the research intensive track are required to take the following courses:
   A. 6 Credits of PSY 492 - Problems in Psychology
   B. PSY 494 - Senior Research Project
   C. At least one course from the following list of advanced courses: PSY 401- Health Psychology; PSY 412 - Foundations of Clinical Psychology; PSY 425 - Social Issues in Developmental Psychology; PSY 427 - Emotional Development; PSY 465 - Hormones, Brain and Behavior; PSY 490 - Seminar in Issues in Contemporary Psychology; and PSY 491 - Senior Seminar in Psychology. The PSY 492 credits should normally be taken with a single instructor and should be completed by the end of the junior year.

Selected students may participate in the University Affiliated Program (UAP) in the Department of Pediatrics at Eastern Maine Medical Center. An interdisciplinary concentration in Disability Studies is required.

Courses numbered 500-599 are graduate courses that are open to both undergraduate and graduate students. Junior and/or senior psychology majors are encouraged to enroll in some of these courses (especially 522, 524, and 561) if possible. Undergraduates do not compete with graduate students for grades in such courses. Undergraduates require permission of the instructor to register for 500-level courses.

Required Courses:

PSY 100 - General Psychology	3
Prerequisite for all other psychology courses	
PSY 341 - Statistics in Psychology I	4
PSY 345 - Principles of Psychological Research	3
Prerequisite: PSY 341	
PSY 470 - History and Systems of Psychology	3

(may be taken in the junior or senior year)
PSY 491 - Senior Seminar in Psychology 3
Prerequisite: PSY 345
or PSY 494 - Senior Research Project 3
Prerequisite: PSY 345 and permission

Students must take at least one course from each of the following groups:

- Biological Psychology:
  PSY 325 - Psychology of Infant Development 3
  PSY 361 - Sensation and Perception 3
  PSY 365 - Physiological Psychology 3
  PSY 366 - Evolutionary Psychology 3
- Cognitive Psychology:
  PSY 350 - Cognition 3
  PSY 351 - Psychology of Motivation 3
  PSY 352 - Learning Across Species 3
- Personality and Social Psychology:
  PSY 308 - Theories of Personality 3
  PSY 330 - Social Psychology 3
- Abnormal and Developmental Psychology:
  PSY 312 - Abnormal Psychology 3
  PSY 323 - Psychology of Childhood 3
  PSY 324 - Psychology of Adolescence 3

Students are required to pass the following courses outside of psychology:

BIO 100 - Basic Biology 4
or BIO 222 - Biology: The Living Science 4
COS XXX any three credits of computer science 3

Romance Languages

General Requirements:

1. Demonstration of listening comprehension, oral, reading, and writing proficiency (students who have not received at least a "B" in FRE 305 or 306, or SPA 206 may be required to take a test in language skills)
2. Demonstration of comprehensive coverage of literature and civilization through successful completion of appropriate course work

Special requirements:

1. A minimum of 30 credits in French and Spanish beyond the intermediate level, at least 24 of which must be in 400 series
2. A minimum of 12 credits above the intermediate level in each of the two languages must be taken.
3. MLC 499 Senior Project must be taken.

Sociology

As a core discipline in the Liberal Arts, Sociology offers courses designed to further the student's understanding and critical analysis of society. Our curriculum provides students with a sociological understanding of the sources and consequences of social inequality and the impact of race, ethnicity, social class, and gender on social institutions and social behavior. Our courses focus on such questions as-How does our social background influence our attitudes and behavior? What are the chances for full equality between women and men? What can we do to reduce the problems of poverty and crime? What options do people have to change their groups, organizations, and culture? What kind of family forms are emerging in the post-industrial world? Why are rates of physical and mental illness unusually high in some areas of society?

These are just a few of the many questions that Sociology seeks to answer. Sociology explores and challenges common assumptions about the world around us and addresses many of the problems facing us in the present: the growing health care crisis; drug use and abuse; violence and discrimination against women and minorities; divorce; and the growing feminization of poverty.

Sociology faculty seek in all our classes to encourage students to look at society in new ways. We are deeply committed to high-quality undergraduate teaching. We offer a welcoming, student-centered atmosphere, and our students typically tell us how much they appreciate the attention the Sociology faculty and staff show them inside and outside the classroom.

The Department offers two optional concentrations within the major: (1) Crime, Law, and Deviance; and (2) Race, Class, and Gender. We also offer a minor in Sociology.

The Sociology curriculum provide excellent preparation for a variety of careers. Employers are increasingly interested in hiring individuals who know about social interaction and organizational behavior. Sociology provides this knowledge and helps you develop your skills in written and oral communication, critical thinking and problem solving, and research methods and data analysis. Opportunities exist for employment in fields such as: criminal justice, public relations, human resources management, industrial relations, organizational research, marketing, family counseling, community planning, teaching, and health care. The Department also offers a supervised internship providing practical experience in a field setting.

Requirements

1. Satisfy general education requirements.
2. Core requirements for a Sociology major (18 credits): SOC 101, SOC 301, SOC 302, SOC 390, SOC 460, SOC 499.
3. Sociology Electives (18 Credits): Nine of the 18 credits must be 300 or 400- level Sociology courses.
4. The following courses must be passed with a grade of "C" or better: ENG 212 or ENG 317; and one of following statistics courses: ANT 462, MAT 215, MAT 232, PAA 315, PSY 341, SOC 310.
5. There is no foreign language requirement for Sociology. However, language courses are strongly recommended for those students planning graduate work or planning to work in careers needing some bilingual proficiency (especially Spanish and French).
6. All required courses (except SOC 101) must be successfully completed with a grade of "C" or better. The GPA for all courses, required and elective, taken for the Sociology major must be at least 2.0.
7. Student Internships: Internships are available for Sociology majors. Those interested in an internship should stop by the department office for guidelines. Students are required to complete an "Intent to Declare an Internship" form. Forms are due March 24 for the fall semester, and October 15 for spring semester.

Optional Course Concentrations

Crime, Law, and Deviance
Required Courses:
SOC 120 - Deviance and Social Control 3
SOC 201 - Social Inequality 3
SOC 214 - Crime and Criminal Justice 3
SOC 314 - Law and Society 3

Elective Courses:
At least one of the following must be taken to complete the concentration.
SOC 208 - Problems of Violence and Terrorism 3
SOC 319 - Domestic Violence and Social Structure 3
SOC 337 - Sociology of Mental Illness 3

Race, Class, and Gender
Required Courses:
SOC 201 - Social Inequality 3
SOC 329 - Sociology of Gender 3
SOC 338 - Race and Ethnicity 3

Elective Courses:
At least two of the following must be taken to complete the concentration; at least one of these two electives must be a sociology course.
BLS 101 - Introduction to Black Studies 3
FAS 101 - Introduction to Franco American Studies 3

NAS 101 - Introduction to Native American Studies 3
SOC 304 - Sociology of Lesbian and Gay Families and Relationships 3
SOC 319 - Domestic Violence and Social Structure 3
SOC 330 - Perspectives on Women 3
WST 101 - Introduction to Women's Studies 3

Suggested curriculum for the B.A. in Sociology

First Year - First Semester
ENG 101 - College Composition 3
LAS 100 - Majoring in the Liberal Arts and Sciences 1
SOC 101 - Introduction to Sociology 3
General Education Requirements 9

First Year - Second Semester
SOC 1XX or 2XX Elective 3
General Education Requirements 9
Electives 3

Second Year - First Semester
SOC 1XX or 2XX Elective 3
General Education Requirements 9
Electives 3

Second Year - Second Semester
SOC 1XX or 2XX Elective 3
General Education Requirements 9
Electives 3

Third Year - First Semester
ENG 212 - Persuasive and Analytical Writing 3
or ENG 317 - Business and Technical Writing 3
SOC 301 - Social Organization: The Micro Picture 3
SOC 302 - Social Organization: The Macro Picture 3
SOC 390 - Logic of Sociological Inquiry 3
SOC 460 - Major Ideas in Sociology 3

Third Year - Second Semester
Statistics Course 3
SOC 3XX or 4XX Electives 6
Electives 6

Fourth Year - First Semester
SOC 3XX or 4XX Electives 6
Electives 9

Fourth Year - Second Semester
SOC 499 - Senior Seminar 3
Electives 12

Spanish

General Requirements:

1. Demonstration of listening comprehension, oral, reading, and writing proficiency (students who have not received at least a "B" in SPA 205 or 206 may be required to take a test in languages skills)
2. Demonstration of comprehensive coverage of literature and civilization through successful completion of appropriate course work
3. 30 credits above intermediate level.

Special Requirements:

SPA 307 - Readings in Peninsular Literature 3
or SPA 308 - Readings in Spanish American Literature 3
18 credits of 400 level Spanish courses

Highly Recommended:

HTY 105 - History of European Civilization I 3
HTY 106 - History of European Civilization II 3

Studio Art

The Depertment of Art offers the Bachelor of Arts, BA, and the Bachelor of Fine Arts, BFA, in Studio Art. The BA in Studio Art requires 48 credits in Studio Art and 15 credits in Art History. The BA does not require a portfolio review for admission. The BFA in Studio Art requires 66 credits in Studio Art and 15 credits in Art History. The BFA requires a portfolio review for admission. The BFA in Studio Art provides the breadth and depth necessary for a liberal arts based professional degree.

The emphasis of the Studio Art program is creative work in the areas of drawing, painting, printmaking, sculpture and digital art. Elective studio work is available in photography, graphic design, and ceramics. The study of Art History is seen as necessary to intelligent studio development, as is the socializing of the student to attitudes, philosophies, and language of the contemporary art world. Most studio courses require that the student purchase a basic supply of necessary tools, equipment and supplies.

Studio degrees 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 government, industry and commerce involving digital art, web design, commercial art and design, and other skills.

Suggested curriculum for the B.A. in Studio Art

First Year - First Semester
ARH 155 - Art History I 3
ART 100 - Drawing I 3
ART 110 - 2-D Design 3
or ART 120 - 3-D Design 3
General Education Requirements/Electives 6

First Year - Second Semester
ARH 156 - Art History II 3
ART 110 - 2-D Design 3
or ART 120 - 3-D Design 3
ART 200 - Drawing II 3
General Education Requirements/Electives 6

Second Year - First Semester
ART 200-level studios 6
ARH 200-300's ARH requirements 3
General Eduation Requirements 3-4
Electives 3

Second Year - Second Semester
ART 200-300 level studios 6
ARH 200-300's ARH requirements 3
General Eduation Requirements 3-4
Electives 3

Third Year - First Semester
ART 200-300 level studio 3
ART 300-400 level studio 3
General Eduation Requirements 3-4
Electives 6

Third Year - Second Semester
ART 200-300 level studio 3
ART 300-400 level studio 3
General Eduation Requirements 3-4
Elective 6

Fourth Year - First Semester
ART 499 - Senior Studio Seminar 3
General Education Requirement 3-4
Electives. 6
ART 300-400 level studio. 3

Fourth Year - Second Semester
ART Studio Electives 6
ARH 300's Art History elective 3
Electives 6

Suggested curriculum for the B.F.A. in Studio Art

First Year - First Semester
ARH 155 - Art History I 3
ART 100 - Drawing I 3
ART 110 - 2-D Design 3
or ART 120 - 3-D Design 3
General Education Requirements/Electives 6

First Year - Second Semester
ARH 156 - Art History II 3
ART 110 - 2-D Design 3
ART 120 - 3-D Design 3

ART 200 - Drawing II 3
General Education Requirements/Electives 6

Second Year - First Semester
ART 200-level studio 6
ARH 200-300's ARH requirements 3
General Eduation Requirements 3-4
Elective 3

Second Year - Second Semester
ART 200-300 level studio 6
ARH 200-300's ARH requirements 3
General Eduation Requirements 3-4
Elective 3

Third Year - First Semester
ART 200-300 level studio 6
ART 300-400 level studio 3
General Eduation Requirements 3-4
Elective 3

Third Year - Second Semester
ART 200-300 level studio 6
ART 300-400 level studio 6
General Eduation Requirements 3-4

Fourth Year - First Semester
ART 499 - Senior Studio Seminar 3
ART 300-400 level studio 6
ART studio elective 3
General Education Requirement 3-4

Fourth Year - Second Semester
ART 498 - Directed Study in Studio Art Ar
ARH 300 level Art History 3
ART Studio Electives 3-6
ART 400 Studio Elective 3

Theatre

The Division of Theatre and Dance offers the Bachelor of Arts degree in Theatre. Within the context of a Liberal arts education, the BA in Theatre provides students an opportunity to study acting, directing, design, and technology, as well as theatre history, literature and theory. Students may also minor in dance as part of their educational experience.

The BA in Theatre includes coursework in the social and behavioral sciences, arts and humanities, natural sciences and mathematics as well as in the performing arts. In addition, students are required to complete two semesters of intermediate level study, or equivalent proficiency, in a second language.

Study in theatre includes 30 credits in required theatre courses and 6 credits in theatre electives. The program focus is on learning through active participation in all aspects of performance and production. Many classes culminate in production and performance experiences, including directing of original scripts or staging of choreography. Further, majors are required to participate in all facets of main stage productions and encouraged to become involved in student-directed shows.

Undergraduate study in Theatre prepares students for graduate work in related fields of study. It also readies students for theatre related careers on and off stage. Graduates go on to careers as actors, designers, dancers, directors, technicians, and stage managers, and theatre educators.

Basic Courses
THE 100 - Theatre Seminar 0
THE 112 - Masterpieces of World Drama I 3
THE 116 - Play Production 3
THE 117 - Fundamentals of Acting 3
THE 202 - Script Analysis 3
THE 220 - Introduction to Stagecraft 3
THE 221 - Introduction to Stagecraft Lab 1
THE 230 - Introduction to Costume Construction 3
THE 231 - Introduction to Costume Construction Laboratory 1
THE 302 - Movement Training for Actors 3
THE 415 - Capstone Experience in Theatre 1
(general education requirement)
THE 461 - Theatre History I 3
THE 462 - Theatre History II 3
Plus six credits of Theatre/Dance Electives: 6
THE 111 - Introduction to Theatre 3
THE 118 - Stage Makeup 3
THE 301 - Fundamentals of Characterization 3
THE 310 - Topics in Theatre Technology 3
THE 320 - Topics in Theatre Design 3
THE 340 - Playwriting, Directing and Performing Lab 3
THE 400 - Voice and Speech for the Actor 3
THE 403 - Styles and Techniques of Comedy 3
THE 466 - Stage Directing 3
THE 470 - Women Playwrights 3
THE 498 - Independent Study in Theatre II 1-3
THE 501 - Acting Styles 3

(Note: No more than 48 Threatre credits will be applied toward the 120 credits required for graduation.)

Suggested curriculum for the B.A. in Theatre

First Year - First Semester
ENG 101 - College Composition 3
LAS 100 - Majoring in the Liberal Arts and Sciences 1
THE 100 - Theatre Seminar
BA requirement: introductory course outside Arts and Humanities 3
General Education Requirement: Mathematics or Human Values and Social Context 3
THE 112 - Masterpieces of World Drama I 3
or THE 116 - Play Production 3
Language Requirement 3

First Year - Second Semester
THE 100 - Theatre Seminar
THE 117 - Fundamentals of Acting 3
General Education Requirement: Mathematics or Human Values and Social Context 3
General Education Requirement or elective 3
Language Requirement 3
THE or general elective 3

Second Year - First Semester
THE 100 - Theatre Seminar 0
THE 112 - Masterpieces of World Drama I 3
or THE 116 - Play Production 3
THE 220 - Introduction to Stagecraft 3
THE 221 - Introduction to Stagecraft Lab 1
Language if needed or general education requirement: Human Values and Social Context 3
BA requirement: upper level course outside Arts and Humanities 3
General education requirement 3

Second Year - Second Semester
THE 100 - Theatre Seminar 0
THE 202 - Script Analysis 3
THE 230 - Introduction to Costume Construction 3
THE 231 - Introduction to Costume Construction Laboratory 1
General Education Requirement: Mathematics or Human Values and Social Context 3
Language if needed or general education requirement: Human Values and Social Context or Ethics or elective 3
Optional THE or DAN elective 2-3

Third Year - First Semester
THE 100 - Theatre Seminar 0
THE 461 - Theatre History I 3
THE elective 3
General Education Requirement: Science 3
BA upper level course requirement 3
General Education Requirement: Mathematics or Human Values and Social Context 3

Third Year - Second Semester
THE 100 - Theatre Seminar 0
THE 302 - Movement Training for Actors 3
THE 462 - Theatre History II 3
General Education Requirement: Science 3
BA upper level course requirement 3
Elective 3

Fourth Year - First Semester
THE 100 - Theatre Seminar
THE elective 3
General Education Requirement: Values and Social Context or Ethics or Science 9
Elective 3

Fourth Year - Second Semester
THE 415 - Capstone Experience in Theatre 1
THE elective 3
General education requirement: Human Values and Social Context or Science 3
Electives 6

Women's Studies

The Bachelor of Arts in Women's Studies is an interdisciplinary program offered by the Women in the Curriculum and Women's Studies Program with faculty on loan from a variety of academic units or hired part time for their particular expertise. Students who major in Women's Studies are employed in social service work, health services occupations, business, law, education, and government at all levels. They find employment in public policy fields, working with women specifically or with people in general.

Women's Studies majors will gain a more complete understanding of how the social construction of gender has influenced the roles, contributions, and experiences of women in many different cultures, now and in the past. Such awareness can help them better understand our contemporary world with its changing roles for women and men alike. They will bring to the gender analysis of any situation knowledge of the complexity of its interaction with race, social class, and other forms of diversity. They will be able to recognize the connection between Women's Studies scholarship and the scholarship of other disciplines. Students will develop an appreciation for the connections between Women's Studies scholarship, activism, and social change, historically and in the present. They will develop the critical intellectual capacity and necessary communication skills to work to value and improve the position of all women in whatever public or private spheres they choose. The major consists of at least 36 credits structured this way.

Required Courses, 18 credits
HTY 332 - Womanhood in America 3
SOC 330 - Perspectives on Women 3
WST 101 - Introduction to Women's Studies 3
WST 340 - Women and Globalization 3
WST 410 - Feminist Theory 3
WST 480 - Senior Seminar in Women's Studies 3

Distribution Requirements, 9 credits, one course from each category:
Culture
CMJ 405 - Women and Communication 3
ENG 246 - American Women's Literature 3
ENG 256 - British Women's Literature 3
ENG 471 - Feminist Literary Criticism 3
ENG 481 - Topics in Women's Literature 3
HTY 494 - Women, History and American Society: Selected Topics 3
PHI 236 - Feminist Ethical, Social and Political Theory 3
THE 470 - Women Playwrights 3
or, another course by pemission

Society and Public Policy
CHF 451 - Family Relationships 3
CHF 452 - Violence in the Family 3
CMJ 405 - Women and Communication 3
(cannot count in two catagories)
POS 385 - Women and Politics 3
SOC 319 - Domestic Violence and Social Structure 3
WST 201 - Topics in Women's Studies 3
or another course by permission

Health, Science and the Environment
NUR 420 - Women's Health 3
WST 230 - Women, Health and the Environment 3
or another course by permission

Note:

The remaining 9 credits can be taken from among the courses listed above, additional approved departmental electives or Women's Studies topics courses, internships, independent study courses, or courses taken at other universities in the U. S. or abroad. Indeed internships, study abroad and national student exchange opportunities are strongly encouraged.

At least 18 credits, including the senior seminar, must be taken at the University of Maine. Students must have a C average (2.0) overall in the courses taken for the major.

The courses listed above are given at least once a year, but in recent years there has also been a wealth of additional topics courses offered both in Women's Studies and in departments. Lists of interdisciplinary and departmental courses available in Women's Studies are published every semester during pre-registration periods. They are also available on our website: http://www.umaine.edu/wic/.

Suggested curriculum for a B.A. in Women's Studies

Because the Women's Studies major is new and is intended to be highly individualized for each student, no sample curriculum is offered. Students interested in the major should take WST 101 as soon as possible, because it is a prerequisite for all the other WST courses and can be an alternate prerequisite for many of the departmental electives. WST 410 is usually taken in the junior year and WST 480 in the senior year. Student majors should also consult with the director early and frequently to plan an appropriate plan of study for themselves.

College of Liberal Arts and Sciences Minors

Anthropology: (18 credits, at least 9 credits must be taken at UMaine)

Courses must be passed with a minimum grade of C-.
ANT 101 - Introduction to Anthropology: Human Origins and Prehistory 3
ANT 102 - Introduction to Anthropology: Diversity of Cultures 3
Plus four additional courses in anthropology or geography 12

Art History: (21 credits)

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. Transfer credits will be accepted for one hundred level courses only.

ARH 155 - Art History I 3
ARH 156 - Art History II 3
ART 100 - Drawing I 3
or ART 110 - 2-D Design 3
or ART 120 - 3-D Design 3
ARH 3XX - Modern Seminar 3
ARH 3XX - Pre-Modern Seminar 3
ARH 2XX - Pre-Modern Survey 3
ARH 2XX - Modern Survey 3

Astronomy: (21 credits, 12 specified and 9 elective)

The Department Chairperson may consider exceptions to this list on a case-by-case basis.

PHY 111 - General Physics I 4
and PHY 112 - General Physics II 4
or PHY 121 - Physics for Engineers and Physical Scientists I 4
and PHY 122 - Physics for Engineers and Physical Scientists II 4
PHY 223 - Special Relativity 1
PHY 236 - Introductory Quantum Physics 3
Three or more courses from the following list:
AST 110 - Introduction to Astronomy Laboratory 1
AST 114 - Navigation 3
AST 215 - General Astronomy I 3
AST 216 - General Astronomy II 3
AST 451 - Astrophysics[1] 3
AST 497 - Topics in Astrophysics[1] 1-3

[1] These courses may be taken for 1-3 credits, as arranged.

Chemistry: (23 credits, at least 14 must be taken at UMaine)

A minor in Chemistry is intended to broaden the academic base of students who already have a solid scientific background in areas such as biology, microbiology, biochemistry and engineering. This curriculum exposes students to the first two years of introductory chemistry and provides additional knowledge at a more advanced level in an area of the student's choice.

A 500 level chemistry course can be used to fulfill the minor requirement by obtaining permission from the course instructor and academic advisor. No grade below a C- will be accepted toward these requirements.

CHY 121 - Introduction to Chemistry 3
CHY 122 - The Molecular Basis of Chemical Change 3
CHY 124 - The Molecular Basis of Chemical Change Laboratory 1
CHY 242 - Principles of Quantitative Analysis and Solution Equilibria 5
CHY 251 - Organic Chemistry I 3
CHY 252 - Organic Chemistry II 3
CHY 253 - Organic Chemistry Laboratory I 2
CHY 254 - Organic Chemistry Laboratory II 2
CHY 371 - Physical Chemistry I 3
CHY 372 - Physical Chemistry II 3
CHY 431 - Structure and Mechanism in Biological Chemistry 3
CHY 443 - Instrumental Analysis 3
CHY 453 - Intermediate Organic Chemistry Laboratory 4
CHY 461 - Advanced Inorganic Chemistry I 3
CHY 462 - Organometallic Chemistry 3
CHY 475 - Physical Chemistry III 3
CHY 483 - Introductory Wood Chemistry 3
and either
BMB 322 - Biochemistry 3
with BMB 323 - Introductory Biochemistry Laboratory 1
or BMB 450 Principles of Biochemistry

Communication: (18 credits)

The minor in Communication consists of CMJ 201, CMJ 202, and 4 electives to total 18 credits. At least two of the electives must be at the 300 and 400 level. A grade of "C-" must be achieved in CMJ 201 and CMJ 202 and the grades for all 18 credits must average a "C." A minimum of nine CMJ credits must be taken at UMaine.

Computer Science: (18 credits)

COS 220 - Introduction to Computer Science I 3
COS 221 - Introduction to Computer Science II 3
COS 230 - Computer Architecture and Assembly Language 3
or COS 250 - Discrete Structures 3
Plus any three additional COS courses at the 300-level or above. 9

Dance: (18 credits)

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 a concentration 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. Many dance students are actively involved in the activities of the UMaine Dance Company Club. Production credits may be available for these efforts.

Core Courses
DAN 101 - Beginner Modern Dance I 2
(Repeated for credit) (2+2 cr.)
DAN 102 - Beginner Ballet I 2
(Repeated for credit) (2+2 cr.)
DAN 201 - Intermediate Modern Dance 2-3
or DAN 202 - Intermediate Ballet 2-3
or DAN 203 - Intermediate Jazz 2
DAN 250 - Dance Composition I 3
Plus 5 credits from:
DAN 112 - Production/Rehearsal 1
(P/F Audition or permission)
DAN 266 - Dance History 3
DAN XXX - Dance technique courses above 100 level

Economics: (18 credits, at least 9 of which must be taken at UMaine)

Students must obtain a minimum 2.0 grade point average in ECO courses taken pursuant to requirements of the minor.

ECO 120 - Principles of Microeconomics 3
ECO 121 - Principles of Macroeconomics 3
ECO 420 - Intermediate Microeconomics 3
or ECO 421 - Intermediate Macroeconomics 3
(With a minimum grade of C- in the option selected)
Elective Economics (ECO) courses at the 300, 400, or 500 levels 9

English: (18 credits)

A minor in English is designed to broaden the experience of students who want to read literature and do some writing (creative, technical, or critical) as a supplement to major study in another field.

The minor requires 18 hours of English courses (excluding ENG 001 and ENG 101). No more than 6 hours of writing courses will count toward the minor in English. The English Minor Advisor will help students develop a plan of study during the students's first year in the Minor.

Writing courses from which only 6 hours will count toward the minor are:
ENG 205 - An Introduction to Creative Writing 3
ENG 206 - Descriptive and Narrative Writing 3
ENG 212 - Persuasive and Analytical Writing 3
ENG 301 - Advanced Composition 3
ENG 309 - Writing Creative Nonfiction 3
ENG 310 - Writing and Careers in English 3
ENG 317 - Business and Technical Writing 3
ENG 395 - English Internship 3
ENG 405 - Directed Writing 3
ENG 406 - Advanced Creative Writing 3
ENG 417 - Advanced Professional Writing 3
ENG 418 - Topics in Professional Writing 3
ENG 496 - Field Experience in Professional Writing 1-6

History: (18 credits)

A minor in History shall consist of at least 18 credits, of which at least 12 must be upper level courses. The 18 credits should include courses that cover more than one continent and more than one century.

International Affairs Minor: (24 credits)

A minor in International Affairs is designed to serve the needs of students from a broad range of fields. The requirements are:

- At least one year of a modern foreign language at the intermediate level (e.g. SPA 203 ad 204)
- A total of 18 credits of course work above the 100 level in Anthropology, Economics, History and Political Science.

Students are to take at least one course and no more than two courses in each of these disciplines, chosen from the list of approved courses. For a list of approved courses please see the core requirements and concentration requirements for the BA in International Affairs.

International Affairs / Canadian Studies

Students in International Affairs have an excellent opportunity to combine their program with an area of study in Canada. Designated a National Resource Center on Canada by the U.S. Department of

Education, the Canadian-American Center oversees the largest and most comprehensive program in Canadian Studies in the country. Students can combine a major in International Affairs with a minor in Canadian Studies; Students also can take field trips to Canada by taking CAN 101: Introduction to Canadian Studies, and study for a semester or year in Canada through the Canada Year program.

Linguistics: (18 credits)

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

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

Core:

The following three courses must be completed for a minimum total of nine credits

CSD 380 - Language Development 3
ENG 477 - Modern Grammar 3
INT 410 - (ANT, ENG, MLC) Introduction to the Study of Linguistics 3

Electives:

Students may select courses from among the following, which will complete the total of 18 credits:

CMJ 366 - Speech Play and Performance 3
CMJ 405 - Women and Communication 3
COS 220 - Introduction to Computer Science I 3
COS 221 - Introduction to Computer Science II 3
COS 301 - Programming Languages 3
COS 470 - Introduction to Artificial Intelligence 3
CSD 484 - Introduction to Speech Science 3
CSD 585 - Language Disorders in Children: School-Age 3
ENG 476 - History of the English Language 3
ENG 579 - The Theory of Composition (also listed as COM 579) 3
FRE 420 - French Phonetics 3
FRE 442 - French Language of North America 3
FRE 500 - History of the French Language 3
FRE 520 - French Linguistics 3
GER 403 - History of the German Language 3
PHI 250 - Formal Logic 3
PHI 260 - Philosophy of Language 3
PSY 522 - Social Development in Children 3

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

Mathematics: (24 credits)

The minor in mathematics consists of 24 credits: 12 credits from the three core calculus courses and 12 from a broad list of upper-level mathematics courses. Courses other than those in the list that follows (including at most one from outside the department of Mathematics and Statistics) may be counted toward the minor with permission from the Department of Mathematics and Statistics.

MAT 126 - Calculus I 4
MAT 127 - Calculus II 4
MAT 228 - Calculus III 4
MAT 258 - Introduction to Differential Equations with Linear Algebra 4
MAT 259 - Differential Equations 3
MAT 261 - Introduction to Abstract Mathematics 3
MAT 262 - Linear Algebra 3
MAT 332 - Statistics for Engineers 3
MAT 425 - Introduction to Real Analysis I 3
MAT 426 - Introduction to Real Analysis II 3
MAT 434 - Introduction to Statistics 4
MAT 436 - Nonparametric Statistics 3
MAT 437 - Statistical Methods in Research 3
MAT 451 - Differential Equations and Dynamical Systems 3
MAT 452 - Complex Analysis 3
MAT 453 - Partial Differential Equations I 3
MAT 454 - Partial Differential Equations II 3
MAT 456 - Network Optimization 3
MAT 457 - Introduction to Mathematical Modeling 3
MAT 463 - Introduction to Abstract Algebra I 3
MAT 464 - Introduction to Abstract Algebra II 3
MAT 465 - Theory of Numbers 3
MAT 471 - Differential Geometry 3
MAT 481 - Discrete Mathematics 3
MAT 487 - Numerical Analysis 3

Students who are interested in a Mathematics minor and for whom MAT 258 is required by their major programs are advised to take MAT 259 and MAT 262 (to replace MAT 258). If MAT 258 is selected, neither MAT 259 nor MAT 262 can be used because of overlapping material.

A student must receive a grade of "C" or higher in all minor requirements.

Modern and Classical Languages: (18 credits)

The minor is offered in French, German, Latin, and Spanish. The requirements are a minimum of 18 credits in the language, 12 of which must be above the intermediate level.

Museum Education: (21 credits)

The Department of Art offers a minor in Museum Education. The Museum Education minor provides students an opportunity to develop both conceptual and practical knowledge concerning the nature of education within the mission and practice of contemporary museum settings. Such settings require an understanding of diverse populations and their learning and experiential needs. The Museum Education minor is designed to meet the needs of students from a wide variety of disciplines who are interested in going on to careers in museum settings. Students graduating with a Museum Education minor will be prepared to apply to graduate programs in museum education and museum studies. Students may also find positions working as educators in a variety of cultural institutions or community organizations. Course work includes 9 credits in museum education, 6 credits in museum studies and 6 credits of practicum/internship experience.

Museum Studies: (18 credits)

The minor in Museum Studies is an interdisciplinary program addressing the needs of diverse types of museums and galleries. In addition to museums devoted to fine arts, students will receive training applicable to history, children's, science, transportation and natural history museums. Students gain skills preparing them for museum/gallery careers such as curator, registrar, preparator and exhibition designer. Coursework includes 3 credits in Museum Studies; 9 credits in related areas of competency (Curatorial Practice, Museum Education and Exhibitions); and 6 credits of Gallery Practicum and Internship experience. A total of 18 credits is required.

Required Courses:

MSE 200 - Introduction to Museums 3
MSE 396 - Internship 3
MSE 397 - Gallery Practicum 3

Areas of Competency:

Students must select three courses: (9 credits)

MSE 300 - Curatorship, Collections Management and Museum Research 3
MSE 310 - Exhibition Design and Theory 3
MSE 311 - Regional Exhibition Survey 3
MSE 370 - Introduction to Museum Education 3

Music: (21-22 credits)

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:

MUL 200 - The Art of Listening to Music: Historical Survey-Laboratory 1
MUL 202 - The Art of Listening to Music: Historical Survey 3
MUY 111 - Elementary Harmony I 2
MUY 112 - Elementary Harmony II 2
MUH 2XX and/or MUY 2XX (3-4 cr.)
MUX XXX music electives to be selected in consultation with music minor faculty advisor 6
MUO XXX and/or MUS XXX and/or MUE 2XX 4

Native American Studies: (18 credits)

Native American Studies is an interdisciplinary minor committed to the study of the cultures, values, history and contemporary life of the American Indian nations and people of North America. The importance and significance of the indigenous people are critical in understanding the nations in which we live. The Native American Studies minor creates an understanding of the unique legacy of American Indians and their continuing relationship to the development of the United States and Canada. Specific emphasis is placed on the Wabanaki peoples of Maine and Canada, with a secondary focus on the Native peoples of North America. However, students may choose to further diversify their studies by including selected courses on the indigenous people of Central and South America.

Native American Studies is founded on the principles of self-determination and sovereignty. It is committed to academic scholarship and research excellence. We educate and inform all students about the Native experience and the rich cultural heritage of the sovereign Native peoples of the North American continent. Our goal is to teach students, through Native perspectives, to understand Native people, their traditions and their cultures.

In an increasingly diverse society, an understanding of distinct populations is a critical asset. A minor in native American Studies exposes students to, and provides them with, an understanding of historical, economic, social and political forces which have shaped Native experiences in the Americas. It prepares students to live in a multicultural society by giving them the skills to confront racism, discrimination and prejudice. It further empowers students to appreciate and celebrate diversity by understanding the worldviews of a distinct people. The program is designed to augment students' major programs of study and prepares students for diverse careers in areas such as: public service, nursing, law enforcement, business, education, medicine, counseling, social work, as well as a myriad of other occupations.

The Native American Studies minor involves a minimum of 18 credits of course work focusing on Native Americans with three required NAS-designated courses.

In addition, students may submit courses with considerable Native American content for consideration for inclusion in the Native American Studies minor. The content for such courses may make them suitable as approved electives.

For more information or advising assistance, please see Maureen Smith (maureen.e.smith@umit.maine.edu), Director of Native American Studies in Dunn Hall or call (207) 581-1407.

These Requirements are:

NAS 101 - Introduction to Native American Studies 3
NAS 102 - Introduction to Wabanaki Culture, History and Contemporary Issues 3
NAS 490 - Theory and Research Methods in Native American Studies 3
3 courses from the following: (9 credits)
- ANT 451 - North American Indian Ethnology 3
- ANT 472 - North American Prehistory 3
- ENG 442 - Native American Literature 3
- HTY 220 - North American Indian History 3
- HTY 481 - Amerindians of the Northeast: A History 3
- NAS 201 - Topics in Native American Studies 1-3
- NAS 298 - Directed Study in Native American Studies 1-6
- NAS 401 - Advanced Topics in Native American Studies 3
- NAS 498 - Directed Study in Native American Studies 1-6

Philosophy: (18 credits)

PHI 200 - Problems in Recent Philosophy 3
PHI 210 - History of Ancient Philosophy 3
or PHI 312 - History of Modern Philosophy 3
Philisophy courses at any level 6
Philisophy courses from above the 100-level 6

Physics: (21 credits, 12 specified and 9 elective)

The Department Chairperson may consider exceptions to this list on a case-by-case basis.

PHY 111 - General Physics I 4
and PHY 112 - General Physics II 4
or PHY 121 - Physics for Engineers and Physical Scientists I 4
and PHY 122 - Physics for Engineers and Physical Scientists II 4
PHY 223 - Special Relativity 1
PHY 236 - Introductory Quantum Physics 3

Three or more courses from the following list: (9 credits)
- PHY 224 - Special Relativity Laboratory 1 - 3
- PHY 238 - Mechanics 3
- PHY 447 - Molecular Biophysics 3-4
- PHY 454 - Electricity and Magnetism I 3
- PHY 462 - Physical Thermodynamics 3-4
- PHY 463 - Statistical Mechanics 3
- PHY 469 - Quantum and Atomic Physics 3
- PHY 470 - Nuclear Physics 2
- PHY 471 - Nuclear Physics Laboratory 1
- PHY 472 - Geometrical and Fourier Optics 3
- PHY 473 - Modern Optics Laboratory 1-2
- PHY 476 - Mathematical Methods in Physics 3
- PHY 480 - Physics of Materials 3

Political Science: (18 credits)

A minor in Political Science shall consist of at least 18 credits. Students are required to take either POS 100 - American Government or POS 120 - Introduction to World Politics. The remaining 15 credits may be chosen by the student from our list of Political Science courses. A minimum of nine (9) POS credits must be taken at UMaine.

Psychology: (18 credits)

Any 18 credits of Psychology (PSY) courses constitute a minor in Psychology. A minimum grade of "C-" must be obtained in each course used to satisfy the Psychology minor. No more than six credits total of PSY 492 and PSY 493 may be used toward the 18 credits. A minimum of 12 Psychology credits must be taken at UMaine. The Department of Psychology must approve all transfer courses applied to the minor.

Public Relations: (18 credits)

CMJ 367 - Public Relations 3
Choose 2 of the following courses: (6 credits)
- CMJ 257 - Business and Professional Communication 3
- CMJ 347 - Argument and Critical Thinking 3
- CMJ 402 - Communication Research 3
- CMJ 403 - Persuasion and Social Influence 3
- CMJ 410 - Social Influence of Mass Communication 3
- CMJ 450 - Communication and Technology 3
- CMJ 470 - Communication in Organizations 3
- CMJ 493 - Topics in Communication 1-3

Choose 2 of the following courses:
- CMJ 100 - Introduction to Mass Communication 3
- CMJ 236 - Writing for the Mass Media 3

CMJ 237 - Newswriting and Reporting 3
CMJ 250 - Introduction to Advertising 3
CMJ 314 - International Mass Communication 3
CMJ 398 - Topics in Mass Communication 1-3
CMJ 498 - Advanced Topics in Mass Communication 1-3
Choose 1 Writing course from:
ENG 301 - Advanced Composition 3
ENG 317 - Business and Technical Writing 3
ENG 417 - Advanced Professional Writing 3
ENG 418 - Topics in Professional Writing 3
PAA 390 - Technical Writing and Communication in Public Service 3
Additional Courses:
Recommended as electives to enhance the Public Relations curriculum.
BUA 220 - The Legal Environment of Business 3
BUA 370 - Marketing 3
CMJ 355 - Advertising Copy and Graphics 3
CMJ 375 - Mass Media Law and Regulation 3
CMJ 495 - Internship 1-3
PAA 425 - Health Care System Management 3
POS 352 - American Public Opinion 3

Rhetoric and Writing: (18 credits)

The goal of the Minor in Rhetoric and Writing is to provide students from all disciplines with extended practice in the kinds of writing that will be important in their professions. Courses in the minor enable students to analyze audiences and writing situations, to convey information clearly, and to write persuasively and effectively in professional contexts.

Students should plan to begin the minor by taking ENG 212 in their sophomore year and ENG 317 in their junior year. A member of the English Department will serve as a minor advisor to help students plan programs that are useful to them given their academic background and interests. The requirements for a Minor in Rhetoric and Writing are as follows:

Foundation Requirements
ENG 212 - Persuasive and Analytical Writing 3
ENG 317 - Business and Technical Writing 3
ENG 417 - Advanced Professional Writing 3
or ENG 418 - Topics in Professional Writing 3
Courses in Applied Writing (3 credits)
ENG 395 - English Internship 3
ENG 496 - Field Experience in Professional Writing 1-6
NMD 206 - Project Design Lab: I 3
Elective Courses
ENG 206 - Descriptive and Narrative Writing 3
ENG 301 - Advanced Composition 3
ENG 309 - Writing Creative Nonfiction 3

Sociology: (18 credits, 9 in courses at UMaine)

A grade of C (2.0) must be achieved in SOC 201, and the grades for all 18 credits must average a "C."

SOC 101 - Introduction to Sociology 3
Any level Sociology elective 6
300-400 level Sociology electives 9

Studio Art: (21 credits)

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 credits is required. Transfer credit is subject to approval by the Department of Art studio faculty.

ARH 155 - Art History I 3
or ARH 156 - Art History II 3
ART 100 - Drawing I 3
ART 110 - 2-D Design 3
ART 120 - 3-D Design 3
ART 200 - Drawing II 3
3-6 Credits in the following introductory courses
ART 220 - Sculpture I 3
ART 230 - Painting I 3
ART 240 - Printmaking I 3
ART 270 - Digital Art I 3
3-6 Credits in the following intermediate courses
ART 320 - Sculpture II 3
ART 330 - Painting II 3
ART 340 - Printmaking II 3
ART 370 - Digital Art IIA: 3D Modeling and Animation 3
ART 371 - Digital Art IIB: Digital Video 3
ART 372 - Digital Art IIC: Interactivity 3

Theatre: (21 credits)

The minor in Theatre is designed to provide students with foundational experiences in acting, design, directing, dramatic literature, and theatre history, with a focus on theatrical production and performance. The requirements for a Minor in Theatre are as follows:

THE 111 - Introduction to Theatre 3
THE 112 - Masterpieces of World Drama I 3
THE 116 - Play Production 3
THE 117 - Fundamentals of Acting 3
THE 118 - Stage Makeup 3
credits in any Theatre courses at the 200 level or above provided that prerequisites are met 6

Women's Studies: (18 credits)

A number of "topics" courses in various departments occasionally focus entirely on women, and other courses have substantial content on women that may make them suitable as approved electives; other courses have been proposed that may be approved as electives. For lists of such courses (both WST and approved departmental electives) offered this semester and the next contact the WIC/WST office, (207) 581-1228 or visit our web site at http://www.umaine.edu/wic/.

Transfer credit subject to approval by the Director of the Women in the Curriculum and Women's Studies Program

Required for the Minor
WST 101 - Introduction to Women's Studies 3
WST 410 - Feminist Theory 3
(given Fall semesters)
WST 480 - Senior Seminar in Women's Studies 3
(given Spring semesters)
9 credits from among the following
CHF 451 - Family Relationships 3
CHF 452 - Violence in the Family 3
CMJ 405 - Women and Communication 3
ENG 246 - American Women's Literature 3
ENG 256 - British Women's Literature 3
ENG 471 - Feminist Literary Criticism 3
ENG 481 - Topics in Women's Literature 3
HTY 332 - Womanhood in America 3
HTY 494 - Women, History and American Society: Selected Topics 3
NUR 420 - Women's Health 3
PHI 236 - Feminist Ethical, Social and Political Theory 3
POS 385 - Women and Politics 3
SOC 319 - Domestic Violence and Social Structure 3
SOC 330 - Perspectives on Women 3
THE 470 - Women Playwrights 3
WST 201 - Topics in Women's Studies 3
WST 230 - Women, Health and the Environment 3
WST 298 - Directed Study in Women's Studies Ar
WST 301 - Intermediate Topics in Women's Studies 3
WST 340 - Women and Globalization 3
WST 401 - Advanced Topics in Women's Studies 3
WST 498 - Directed Study in Women's Studies Ar

College of Natural Sciences, Forestry, and Agriculture

The College of Natural Sciences, Forestry, and Agriculture specializes in programs related to understanding and responsible management of the world's natural resources. It consists of ten departments and one school, which offer academic programs at both the undergraduate and graduate level. The college offers a diversity of programs taught by a faculty, that represents the largest assemblage of scientific expertise in Maine. In addition to forestry, wildlife, agriculture and a full selection of ecology and environmental science based programs, students can choose programs of study from the full spectrum of biological sciences, marine sciences, geological sciences, and food science and human nutrition. Students may also prepare for medical school, veterinary school, and other health professions.

The undergraduate programs of the college are designed to develop proficiency in a specific discipline or profession and to provide a broad general education. The college has extensive teaching and research facilities, plus some of the most sophisticated research equipment available anywhere. In addition, with its broad geographic, climatic, and landscape diversity, the state of Maine provides an exceptional outdoor laboratory for students interested in the natural sciences, forestry, and agriculture.

ACADEMIC PROGRAMS:

Bachelor of Arts in:
- Biology
- Botany
- Geological Sciences
- Zoology

Bachelor of Science in:
- Animal and Veterinary Sciences
- Aquaculture
- Biochemistry
- Biology
- Botany
- Clinical Laboratory Sciences
- Ecology and Environmental Sciences
- Environmental Management and Policy
- Food Science and Human Nutrition
- Forest Ecosystem Science
- Forest Operations Science
- Forestry
- Geological Sciences
- Landscape Horticulture
- Marine Science
- Microbiology
- Molecular and Cellular Biology
- Parks, Recreation and Tourism
- Resource and Agribusiness Management
- Sustainable Agriculture
- Wildlife Ecology
- Wood Science and Technology
- Zoology

Minors:
- Animal and Veterinary Sciences
- Aquaculture
- Biochemistry
- Biology
- Botany
- Ecology and Environmental Sciences
- Equine Studies
- Fisheries
- Food Science
- Forest Ecosystem Science
- Forest Products
- Forest Recreation Management
- Geological Sciences
- Human Nutrition
- Landscape Horticulture
- Microbiology
- Molecular and Cellular Biology
- Plant Science
- Pre-medical Studies*
- Resource and Agribusiness Management
- Soil Science
- Sustainable Agriculture
- Zoology

* Minor is administered by the Department of Biological Sciences. Descriptive information may be found under Health Professions.

College of Natural Sciences, Forestry, and Agriculture Graduation Requirements:

The college offers both Bachelor of Science and Bachelor of Arts degrees. Each program has its specific curriculum and all include the general education requirements of the university. To obtain a Bachelor of Arts degree students must complete, within their program of study, 27 credits in courses meeting the human values and social context general education criteria of the university. At least 12 credits of these must be at the 200 level or above. In addition, students must complete a minimum of 72 credits outside their major. (If a particular major requires courses in another discipline, either within the same department or in another department, those credits may still count toward the 72 credits.) Depending on the particular program, the degree will require from 120 to 128 total credits for graduation. In addition, each student must achieve a grade point average of 2.0 over all courses taken. Some programs may also require minimum grade point averages for courses within the major. Students should consult individual program sections about specific details concerning a particular major.

College of Natural Sciences, Forestry, and Agriculture Notes:

The college has a well-developed, student-oriented academic advising system. Each student has a faculty advisor who assists in program planning and career development. Throughout the undergraduate years, the capabilities, aspirations, and goals of the students are the primary concerns governing the advising process. In the college, students find an environment small enough to feel that they are more than just a number, but large enough to provide the modern facilities necessary for a comprehensive education preparing them for the challenges of tomorrow.

Students may select a degree program upon entering the college, or may delay a formal choice of major until the sophomore year. In addition to the major, students have the option of selecting one of more than 20 minors. These optional minors range from such disciplines as chemistry, to various humanities and social sciences. Choice of minor enables students to strengthen their preparation in the major by selecting supporting courses from a related discipline.

Admission Requirements:

Entrance requirements for the college include the following high school units: four years of English, three years of mathematics (selected programs require four years of mathematics and it is encouraged for all programs), two years of social science, and a minimum of two years of laboratory sciences (selected programs require three years of laboratory sciences). One year of fine arts and one year of computer science are highly recommended. Two years of a single foreign language or American Sign Language (ASL) are required for BA programs.

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Animal and Veterinary Sciences

The faculty of the Department of Animal and Veterinary Sciences offers the Bachelor of Science in Animal and Veterinary Sciences. The animal sciences curriculum is designed to provide a solid understanding of biological sciences as well as specific expertise in the diseases, genetics, breeding, nutrition, and physiology of domestic and laboratory animals. Because a basic knowledge in animal sciences is fundamental to successful work in many job situations, the curriculum offers a wide choice of electives so students may adapt their course of study to meet special professional interests or needs. Through the proper use of options, students can prepare for admission to a College of Veterinary Medicine or graduate school, to teach science in secondary schools, to pursue technical sales and service work in agriculture, for careers in animal-related research, or to develop animal production enterprises such as dairy, livestock or equine farms.

Program Overview

This department administers undergraduate concentrations in Pre-Veterinary Science and in Animal Science. The pre-veterinary concentration is recommended for superior students who seek admission to veterinary colleges. The suggested courses beyond the basic degree requirements in Animal and Veterinary Sciences are those that are required or recommended for admission to Colleges of Veterinary Medicine in North America. The Animal Science concentration is recommended for students who wish to pursue careers in animal agriculture, including the dairy, livestock or equine industries. Animal Science courses also serve as elective opportunities for students in other agricultural and life sciences, and minors are available in Animal and Veterinary Sciences or in Equine Studies.

Students may also consider continuing their studies at the graduate level after the completion of an undergraduate degree. The Department offers the Master of Science degree in Animal Science for programs of study in animal nutrition, pathology, and reproductive physiology. The Doctor of Philosophy degree may be earned in Food and Nutritional Sciences, Biological Sciences, Biochemistry and Molecular Biology, or through the Individualized PhD Program.

Hands-on Experience

An important aspect of the degree in Animal and Veterinary Sciences is the requirement for hands-on experience with economically important domestic species. At the University's Witter Teaching and Research Farm, AVS majors are given

numerous opportunities to increase their competency with, and eventually manage, cattle, horses and sheep. We consider the experiential learning at the Witter Center to be a vital part of our students' education, because it allows them to use their knowledge to solve practical problems on a working farm.

Course and Credit Requirements

For the Bachelor of Science (BS) degree in Animal and Veterinary Sciences, a minimum grade of "C-" is required for degree credit in all required courses with the AVS prefix.

BS in Animal and Veterinary Sciences with Animal Science concentration (121 credits)

Required Animal and Veterinary Science Courses (42 credits)

Science and Mathematics Courses (33 credits)

Human Values and Social Context Courses (18 credits)

Ethics Requirement (3 credits)

Career Enhancement (18 credits)

English Courses (6 credits)

NFA 117 - Issues and Opportunities (1 credit)

BS in Animal and Veterinary Sciences with Pre-Veterinary concentration (128 credits)

Required Animal and Veterinary Science Courses (42 credits)

Science and Mathematics Courses, including Vet School requirements (58 credits)

Human Values and Social Context Courses (18 credits)

Ethics Requirement (3 credits)

English Courses (6 credits)

NFA 117 - Issues and Opportunities (1 credit)

Career Enhancement Courses

Students should select a minimum of 18 credits in an area of study to be chosen in consultation with their academic advisor. Possible areas of study include, but are not limited to, pre-veterinary sciences, education, business, journalism, laboratory sciences, and production agriculture.

Suggested curriculum for the B.S. in Animal and Veterinary Sciences (Animal Science concentration)

First Year - First Semester

AVS 145 - Animal Science[3]	4
BIO 100 - Basic Biology	4
BMB 207 - Fundamentals of Chemistry	4
CHY 121 - Introduction to Chemistry[1]	3
with	
CHY 123 - Introduction to Chemistry Laboratory[1]	1
MAT 122 - Pre-Calculus[2]	4
NFA 117 - Issues and Opportunities	1

First Year - Second Semester

BIO 200 - Biology of Organisms	4
BMB 208 - Elementary Physiological Chemistry	4
CHY 122 - The Molecular Basis of Chemical Change[1]	3
with	
CHY 124 - The Molecular Basis of Chemical Change Laboratory[1]	1
ENG 101 - College Composition	3
Career Enhancement Elective	3

Second Year - First Semester

BIO 462 - Principles of Genetics	3
INT 110 - (ECO, REP) Modern Economic Problems	3
Math or Computer Requirement[2]	4
Career Enhancement Elective	3

Second Year - Second Semester

AVS 200 - Topics in Animal and Veterinary Science	1
AVS 351 - Animal Science Techniques	3
AVS 455 - Animal Nutrition	4
CMJ 103 - Fundamentals of Public Communication	3
Ethics requirement[3]	3

Summer (or during the Third year)

Work Experience Requirement in Animal and Veterinary Science	4

(Choose AVS 396, AVS 371 (Spring) *or* AVS 397 (Spring or Fall))

Third Year - First Semester

AVS 461 - Animal Breeding	3
AVS 480 - Physiology of Reproduction	3
BIO 377 - Animal Physiology	3
Requirement for Non-Livestock Course	3
Choose either	
AVS 249 - Laboratory Animal Technology (Spring)[3]	
AVS 203 - Equine Management (Fall)	
or SMS 211 - Introduction to Aquaculture (Fall)	

Third Year - Second Semester

AVS 349 - Livestock Management[3]	3
AVS 437 - Animal Diseases	3
Human Values and Social Context Requirement.	6
Career Enhancement Electives.	3

Fourth Year - First Semester

AVS 346 - Dairy Cattle Technology[3]	5
AVS 401 - Senior Paper in Animal Science I	2
ENG 317 - Business and Technical Writing	3
Career Enhancement Elective.	3
Human Values/Social Context Elective	3

Fourth Year - Second Semester

AVS 402 - Senior Paper in Animal Science II	2
AVS 466 - Feeding Dairy Cattle	2
Human Values/Social Context Requirement.	3
Career Enhancement Elective	6

[1]Students in the Animal Science concentration may take BMB 207/208 in place of CHY 121/123 and 122/124.

[2]Students must complete the Math sequence through MAT 122 and take at least 8 credits from the following: MAT 111, MAT 122, MAT 126, MAT 232, MAT 151, COS 120.

[3]The Ethics requirement may be satisfied by completing AVS 145, AVS 249, AVS 346 and AVS 349. Other AVS courses that satisfy the Ethics requirement are AVS 150 and AVS 151.

Suggested curriculum for the B.S. in Animal and Veterinary Sciences (Pre-Veterinary Concentration)

First Year - First Semester

AVS 145 - Animal Science[2]	4
BIO 100 - Basic Biology	4
CHY 121 - Introduction to Chemistry	3
CHY 123 - Introduction to Chemistry Laboratory	1
Math Requirement[1]	4
NFA 117 - Issues and Opportunities	1

First Year - Second Semester

BIO 200 - Biology of Organisms	4
CHY 122 - The Molecular Basis of Chemical Change	3
CHY 124 - The Molecular Basis of Chemical Change Laboratory	1
ENG 101 - College Composition	3
Math Requirement[1]	4

Second Year - First Semester

BIO 462 - Principles of Genetics	3
CHY 251 - Organic Chemistry I	3
CHY 253 - Organic Chemistry Laboratory I	2
INT 110 - (ECO, REP) Modern Economic Problems	3
Ethics Requirement[2]	3

Second Year - Second Semester

AVS 200 - Topics in Animal and Veterinary Science	1
AVS 351 - Animal Science Techniques	3
AVS 455 - Animal Nutrition	4
CHY 252 - Organic Chemistry II	3
CHY 254 - Organic Chemistry Laboratory II	2
CMJ 103 - Fundamentals of Public Communication	3

Summer (or duing the Third year)

Work Experience requirement in Animal and Vererinary Sciences.	4

Choose AVS 396, AVS 371 (Spring), or AVS 397 (Spring or Fall)

hird Year - First Semester
VS 461 - Animal Breeding 3
VS 480 - Physiology of Reproduction 3
IO 377 - Animal Physiology 3
equirement for Non-Livestock Course 3
hoose either
AVS 249 - Laboratory Animal Technology[2] (Spring)
AVS 203 - Equine Management (Fall)
or SMS 211 - Introduction to Aquaculture (Fall)
PHY 111 - General Physics I 4

hird Year - Second Semester
VS 349 - Livestock Management[2] 3
MB 300 - General Microbiology 3
MB 305 - General Microbiology Laboratory 2
HY 112 - General Physics II 4
luman Values/Social Context Requirement 3

ourth Year - First Semester
VS 346 - Dairy Cattle Technology 5
VS 401 - Senior Paper in Animal Science I 2
NG 317 - Business and Technical Writing 3
luman Values/Context Requirement 6

ourth Year - Second Semester
VS 402 - Senior Paper in Animal Science II 2
VS 437 - Animal Diseases 3
VS 466 - Feeding Dairy Cattle 2
MB 322 - Biochemistry 3
MB 323 - Introductory Biochemistry Laboratory 1
luman Values and Social Context Requirement 3

[1]Students must complete the Math equence through MAT 126 and take at least wo courses from the following: MAT 111, AT 122, MAT 126, MAT 232, MAT 151 nd COS 120. Note that MAT 232 - rinciples of Statistical Inference is an dmissions requirement for a number of eterinary Colleges.

[2]The Ethics requirement may be satisfied y completing AVS 145, AVS 249, AVS 346 nd AVS 349. Other AVS courses that satisfy e Ethics requirement are AVS 150 and AVS 51.

Aquaculture

Aquaculture is the science and business of producing aquatic animals and plants useful to humans. Aquaculture is the application of biological, physical and business management principles to solve problems encountered with the production, processing, marketing, and management of aquatic animals and plants.

Students majoring in aquaculture receive a well-rounded set of courses in the biological and physical sciences, aquaculture production, resource economics, food science and business management in the core program of study. Students are required to take a minimum of 15 credits in a secondary area of specialization of their choosing (career enhancement electives) to augment their major. For example, through the career enhancement electives, students can obtain the minimum course requirements for certification as an Associate Fisheries Scientist by the American Fisheries Society. Or they may choose to obtain a minor in a recognized field of study, e.g. resource and agribusiness management, microbiology etc. Numerous options are available. Career enhancement electives are chosen in consultation with the student's academic advisor.

Students majoring or minoring in Aquaculture at the University of Maine will find a strong interaction between research and academic programs. Undergraduates have the opportunity to participate in research studies conducted at one of the university's three aquaculture research facilities: the Aquaculture Research Center (on campus), the Center for Cooperative Aquaculture Research (Franklin, ME), and the shellfish aquaculture laboratory at the Darling Marine Center (Walpole, ME). Students can acquire academic credit for approved internship experiences in the aquaculture industries. In addition, we have arrangements with the Marine Technology Center of Washington County Technical College for students to acquire academic credit for approved courses in mariculture technology.

The Aquaculture degree program is an interdisciplinary program but is offered through the School of Marine Sciences. Interested students are encouraged to consult with the aquaculture contact person within the School for additional information.

Bachelor of Science in Aquaculture Requirements

1. Satisfy university-wide general education requirements
2. Earn at least 120 credits
3. College: NFA 117
4. English: ENG 317
5. Communication: CMJ 103
6. Marine Sciences: At least SMS 100, 211, 220, 309, 320, 409, 420, 422, 425, 467, 401
7. Biology: BIO 100, 200
8. Biological Engineering: BRE 449
9. Chemistry: BMB 207, 208 or CHY121-123, 122-124
10. Computer Science: COS 101, 102, 103 combined, or 110 or 211 or 220
11. Food Science and Nutrition: FSN 440
12. Interdisciplinary courses: INT 110, 460
13. Mathematics: MAT 114 or 126 or 151, and 215 or 232 or BIO 252.
14. Resource Economics and Policy: REP 254. A minimum of 15 credits of career enhancement electives
15. Senior capstone experience: AVS 401, 402 or SMS 400

Suggested curriculum for the B.S. in Aquaculture

First year - First Semester
BIO 100 - Basic Biology 4
NFA 117 - Issues and Opportunities 1
SMS 100 - Introduction to Ocean Science 3
SMS 211 - Introduction to Aquaculture 3
Human Values and Social Context Elective 3

First Year - Second Semester
BIO 200 - Biology of Organisms 4
COS 100 - Introduction to the Personal Computer and the Internet 3
ENG 101 - College Composition 3
MAT 126 - Calculus I 4

Second Year - First Semester
CHY 121 - Introduction to Chemistry 3
CHY 123 - Introduction to Chemistry Laboratory 1
CMJ 103 - Fundamentals of Public Communication 3
SMS 220 - Introduction to Marine Resources 2
SMS 420 - Fish Aquaculture I 3

Second Year - Second Semester
CHY 122 - The Molecular Basis of Chemical Change 3
CHY 124 - The Molecular Basis of Chemical Change Laboratory 1
INT 110 - (ECO, REP) Modern Economic Problems 3
MAT 232 - Principles of Statistical Inference 3
SMS 409 - Shellfish Aquaculture 3
Human Values and Social Context Elective 3

May Term
SMS 309 - Techniques in Shellfish Aquaculture 2

Third Year - First Semester

BIO 462 - Principles of Genetics	3
or SMS 425 Applied Population Genetics	3
SMS 422 - Biology of Fishes	3
SMS 425 - Applied Population Genetics	3
SMS 467 - Fish Nutrition and Feeding	3
Human Values and Social Context Elective	3
Career enhancement electives	3

Third Year - Second Semester

ENG 317 - Business and Technical Writing	3
INT 460 - (BSC, CHB, CIE, SMS) Environmental Aspects of Aquaculture	3
REP 254 - Introduction to Production Economics	3
Human Values and Social Context Elective	3
Career enhancement elective	3

Fourth Year - First Semester

AVS 401 - Senior Paper in Animal Science I	2
SMS 449 - Engineering in Aquaculture	3
Human Values and Social Context Elective	3
Career enhancement electives	6

Fourth Year - Second Semester

AVS 402 - Senior Paper in Animal Science II	2
FSN 440 - Utilization of Aquatic Food Resources	3
SMS 401 - Critical Issues in Aquaculture	1
Electives	6
Career enhancement electives	3

Biochemistry / Microbiology / Molecular and Cellular Biology

The Department of Biochemistry, Microbiology and Molecular Biology offers three separate Bachelor of Science (BS) degree programs in Biochemistry, Microbiology, and Molecular and Cellular Biology. All three programs are designed to provide the student with a broad background in the biological and physical sciences and an opportunity for in depth concentration in one or more of the most active disciplines in the biological sciences.

Departmental Requirements:

Cumulative grade point average of 2.0 in the major.

Hands-on Experience:

An important aspect of all three undergraduate programs is the requirement for hands-on experience in the laboratory. Laboratory courses are offered in fundamental aspects of biochemistry and microbiology as well as specialized topics such as recombinant DNA techniques, virology, cell culture, immunology, pathogenic microbiology and microbial genetics. Laboratory courses in these topics are not generally available at smaller institutions without graduate and research programs or at many larger research universities where student numbers are too large to accommodate numerous laboratory courses in such specialized areas. At the University of Maine, however, we are large enough to have faculty with expertise in most sub disciplines but small enough in terms of students to be able to provide a wide variety of laboratory courses. We also take pride in the fact that all of our laboratory courses above the introductory level are taught by professors, not by graduate students or part-time instructors. We believe strongly that such close interactions between students and faculty in small groups typical of most laboratory courses is very important and mutually beneficial to the student and the faculty. Because the Department also offers MS and Ph.D. programs in the areas of biochemistry, microbiology, and molecular biology, we provide a variety of opportunities for undergraduate students to engage in independent study and research with individual faculty. In fact, we believe that this is one of the most important aspects of our undergraduate programs. In the required senior year research course, you'll be part of a research team of faculty, postdoctoral research associates, technicians, and graduate and undergraduate students who are actively engaged in ongoing research projects that are both publicly and privately funded. Field Experience courses also provide opportunities to earn academic credits while working off-campus in industry, hospitals, and research institutes.

Facilities:

The facilities for teaching and research are located in two modern additions to Hitchner Hall. The building contains one of the newest and most modern facilities in New England for teaching and research in biochemistry, microbiology and molecular biology, including specialized equipment and laboratories for teaching molecular biology, virology, pathogenic microbiology, and animal cell culture. The University's Automated DNA Sequencing Facility is also located adjacent to our research laboratories in Hitchner Hall. Close proximity to research laboratories enables students to participate in independent study and undergraduate research projects using state-of-the-art equipment and methods.

Career Opportunities:

Rewarding career opportunities for biochemists, microbiologists, and molecular biologists are exceptionally numerous and varied. A career in one of these fields is not just a job, but an opportunity to explore new phenomena, participate at the frontiers of the most actively expanding areas of science today, and make significant contributions to human beings, our society and our world. These disciplines are at the core of the rapidly expanding fields of biotechnology, molecular biology and the allied health professions. Graduates of these programs work in: public health laboratories, medical, dental, veterinary, and university research laboratories; pharmaceutical, food, and chemical industries; environmental research and monitoring laboratories; colleges and universities; and a variety of existing as well as emerging genetic engineering and biotechnology industries.

Health Professions:

Majoring in biochemistry, microbiology or molecular biology provides the ideal preparation for further study in medical, dental, veterinary and other health-related professional schools. Students interested in these careers should register in their first year with the Health Professions Committee, which provides information and assistance in selecting proper supporting courses and the application process.

Accelerated UM/UNECOM Binary Degree Program with a BS in Biochemistry or Microbiology

The University of Maine and the University of New England College of Osteopathic Medicine (UNECOM) cooperate to offer an Accelerated Binary Degree Program (3+4 program), which allows qualifying students majoring in Biochemistry or Microbiology at UMaine to be admitted to the College of Osteopathic Medicine at UNE after three years at UMaine rather than the customary four. Upon successful completion of the first year of medical school at UNE, students participating in this program will receive a bachelor's degree in Microbiology from UMaine. The intent of this program is to facilitate an increase in the number of primary care physicians practicing in the State of Maine. This agreement is specifically between the University of Maine and the University of New England College of Osteopathic Medicine. Consult the Health Professions Office for qualifications and curriculum requirements.

Biochemistry

Biochemistry is concerned with the study of all living systems at the cellular and molecular level and is, therefore, fundamental

to all life sciences. The field is broad in its disciplinary subjects and applications. It emphasizes the use of chemistry and other physical sciences to understand basic life processes and the products of such processes. In addition to traditional study of the structure and function of biological molecules and understanding of metabolism, the field has come to encompass aspects of molecular biology, molecular genetics, and many areas of biotechnology. It forms a major component of modern medical research and practice, bioengineering and contemporary agriculture and environmental research.

Microbiology

Microbiology is the study of microscopic forms of life such as bacteria and viruses and the immune response to these microorganisms. It is a broad, multidisciplinary field using techniques of genetics, chemistry, biochemistry, physiology, ecology, and pathology to study the biology of microorganisms from gene expression at the molecular level to the composition of populations of microorganisms. Exciting discoveries involving microorganisms have important and far-reaching implications for biotechnology, molecular biology, medicine, public health and the environment. AIDS and other important diseases present new and exciting challenges for microbiologists in the public health field. Advances in recombinant DNA technology, immunology, and the ability to manipulate the biology of microbial cells have revolutionized science and thrust microbiology into the center of the rapidly expanding arena of biotechnology.

Molecular and Cellular Biology

Molecular and Cellular Biology has evolved in recent years as a response to the increased ability to study organisms at the molecular level. This discipline involves the systematic study of the molecular and structural basis for the organization, transmission and expression of genetic information, in addition to the general study of macromolecular systems involved in the structure and function of cellular components. Recent years have seen explosive advances in the study of DNA and molecular genetics including gene cloning, sequencing and mapping. Developments in recombinant DNA technology have opened up entirely new areas of study and provided powerful techniques that are revolutionizing the pharmaceutical, health and agricultural industries and have spawned new industries in biotechnology.

Suggested curriculum for the B.S. in Biochemistry

First Year - First Semester	
BIO 100 - Basic Biology	4
CHY 121 - Introduction to Chemistry	3
CHY 123 Introduction to Chemistry Laboratory	1
ENG 101 - College Composition	3
MAT 126 - Calculus I	4
NFA 117 - Issues and Opportunities	1
First Year - Second Semester	
BIO 200 - Biology of Organisms	4
BMB 280 - Introduction to Molecular and Cellular Biology	3
CHY 122 - The Molecular Basis of Chemical Change	3
CHY 124 - The Molecular Basis of Chemical Change Laboratory	1
MAT 127 - Calculus II	4
Second Year - First Semester	
BMB 300 - General Microbiology	3
BMB 305 - General Microbiology Laboratory	2
CHY 251 - Organic Chemistry I	3
CHY 253 - Organic Chemistry Laboratory I	2
General Education Requirements	6
Second Year - Second Semester	
BMB 322 - Biochemistry	3
BMB 323 - Introductory Biochemistry Laboratory	1
CHY 252 - Organic Chemistry II	3
CHY 254 - Organic Chemistry Laboratory II	2
General Education Requirements	6
Third Year - First Semester	
BMB 400 - Molecular Genetics	3
BMB 464 - Analytical and Preparative Biochemical Laboratory Methods	4
PHY 111 - General Physics I	4
Science Elective	3
Third Year - Second Semester	
BMB 460 - Advanced Biochemistry	3
PHY 112 - General Physics II	4
General Education Requirements	6
Science Elective	3
Fourth Year - First Semester	
BMB 491 - Biochemistry, Microbiology and Molecular Biology Research	Ar
Electives	6
Science Elective	4
Fourth Year -Second Semester	
BMB 491 - Biochemistry, Microbiology and Molecular Biology Research	Ar
Elective	4
Science Electives	6

Suggested curriculum for the B.S. in Microbiology

First Year - First Semester	
BIO 100 - Basic Biology	4
CHY 121 - Introduction to Chemistry	3
CHY 123 Introduction to Chemistry Laboratory	1
ENG 101 - College Composition	3
MAT 126 - Calculus I	4
NFA 117 - Issues and Opportunities	1
First Year - Second Semester	
BIO 200 - Biology of Organisms	4
BMB 280 - Introduction to Molecular and Cellular Biology	3
CHY 122 - The Molecular Basis of Chemical Change	3
CHY 124 - The Molecular Basis of Chemical Change Laboratory	1
General Education Requirement	3
Second Year - First Semester	
BMB 300 - General Microbiology	3
BMB 305 - General Microbiology Laboratory	2
CHY 251 - Organic Chemistry I	3
CHY 253 - Organic Chemistry Laboratory I	2
General Education Requirements	6
Second Year - Second Semester	
BMB 322 - Biochemistry	3
BMB 323 - Introductory Biochemistry Laboratory	1
BMB 420 - Pathogenic Microbiology and Serology	3
BMB 421 - Pathogenic Microbiology and Serology Laboratory	1
CHY 252 - Organic Chemistry II	3
CHY 254 - Organic Chemistry Laboratory II	2
General Education Requirement	3
Third Year - First Semester	
BMB 440 - Introductory Immunology	3
BMB 464 - Analytical and Preparative Biochemical Laboratory Methods	4
MAT 232 - Principles of Statistical Inference	3
PHY 111 - General Physics I	4
Third Year - Second Semester	
BMB 455 - Virology	3
BMB 456 - Virology Laboratory	1
PHY 112 - General Physics II	4
General Education Requirements	6
Fourth Year - First Semester	
BMB 430 - Bacterial Physiology	3
BMB 431 - Bacterial Physiology Laboratory	1
BMB 471 - Cell Culture Laboratory	1
BMB 490 - Microbial Genetics	5
BMB 491 - Biochemistry, Microbiology and Molecular Biology Research	Ar
Elective	3

Fourth Year - Second Semester

BMB 410 - Diversity of Microorganisms	3
BMB 441 - Immunology Laboratory	1
BMB 491 - Biochemistry, Microbiology and Molecular Biology Research	Ar
Electives	6

Suggested curriculum for the B.S. in Molecular and Cellular Biology

First Year - First Semester

BIO 100 - Basic Biology	4
CHY 121 - Introduction to Chemistry	3
CHY 123 Introduction to Chemistry Laboratory	1
ENG 101 - College Composition	3
MAT 126 - Calculus I	4
NFA 117 - Issues and Opportunities	1

First Year - Second Semester

BIO 200 - Biology of Organisms	4
BMB 280 - Introduction to Molecular and Cellular Biology	3
CHY 122 - The Molecular Basis of Chemical Change	3
CHY 124 - The Molecular Basis of Chemical Change Laboratory	1
MAT 127 - Calculus II	4

Second Year - First Semester

BMB 300 - General Microbiology	3
BMB 305 - General Microbiology Laboratory	2
CHY 251 - Organic Chemistry I	3
CHY 253 - Organic Chemistry Laboratory I	2
General Education Requirements	6

Second Year - Second Semester

BMB 322 - Biochemistry	3
BMB 323 - Introductory Biochemistry Laboratory	1
CHY 252 - Organic Chemistry II	3
CHY 254 - Organic Chemistry Laboratory II	2
Program Elective	3
General Education Requirement	3

Third Year - First Semester

BIO 462 - Principles of Genetics	3
BMB 400 - Molecular Genetics	3
BMB 464 - Analytical and Preparative Biochemical Laboratory Methods	4
PHY 111 - General Physics I	4
General Education Requirement	3

Third Year - Second Semester

BMB 460 - Advanced Biochemistry	3
PHY 112 - General Physics II	4
General Education Requirements	3

Fourth Year - First Semester

BMB 490 - Microbial Genetics	5
BMB 491 - Biochemistry, Microbiology and Molecular Biology Research	Ar
Program Elective	3
General Education Requirement	3

Fourth Year - Second Semester

BMB 491 - Biochemistry, Microbiology and Molecular Biology Research	Ar
Program Electives	6
Elective	3

Biology / Botany / Zoology

The Department of Biological Sciences offers both BA and BS degrees in Biology, in Botany, and in Zoology. For more information about areas of specialization and for an overview of our facilities, cooperative programs, and list of faculty in the Department of Biological Sciences, see our web site http://www.umesci.maine.edu/biology/.

Bachelor of Arts or Bachelor of Science

Both the BA and BS degrees in Biology, Botany, and Zoology provide a strong background in biological sciences. The less stringent BA requirements in affiliated sciences and math may be insufficient preparation for a health-professions career and some other careers requiring graduate study. The BA option is structured to ensure a broad liberal arts education and allows more flexibility for minors and double majors. The BA also requires students to develop an enriched international perspective. This may be done by (1) establishing proficiency in a foreign language at the intermediate level, (2) completing at least one semester in a University of Maine approved foreign exchange program, or (3) completing nine credits in General Education courses in Cultural Diversity and International Perspectives. Credits earned may be used to fulfill some General Education requirements. The College of Natural Sciences, Forestry, and Agriculture has a BA requirement of 27 credits in General Education courses in Human Values and Social Context.

For the BA and BS in Biology, Botany and Zoology, a minimum of "C-" is required in BIO 100 and in BIO 200 for degree credit.

All students must earn a minimum GPA of 2.0 in all Biology, Affiliated Sciences, and Math courses averaged together. Transfer students must complete a minimum of 12 credits in Biology courses in residence in Biological Sciences Areas I-V.

Requirements for BA and BS degrees outlined below are the same in Basic Biological Sciences and Biological Sciences Areas and differ only in Affiliated Sciences and Math.

BA and BS in Biology

Tremendous advances in biotechnology, medicine, environmental studies, and related areas make biology an important and fascinating field of study. Growth in these areas is expected to continue and to affect society in numerous ways and at many levels. Graduates of our Biology program pursue various careers, depending on their interest, level of educational attainment, and subsequent professional education. Among the more typical career areas are human and veterinary medicine, scientific research and development, teaching at the high-school and college levels, hospital-laboratory analysis, environmental monitoring and regulation at state and federal levels, and private design and consulting.

Students in Biology have access to a wide range of courses in biology, covering all major areas of the field and most of them with laboratories. Biology offers many areas of specialization and opportunities for students, including anatomy and physiology, cell biology, ecology, entomology, evolution, fish biology, freshwater biology, genetics and development, health professions (including accelerated programs in cooperation with the University of New England College of Osteopathic Medicine (UNECOM) and New England College of Optometry (NECO)), and systematics. Students in their third and fourth years of study, and who intend to pursue post-baccalaureate studies leading to advanced degrees, are strongly encouraged to augment their formal courses with independent research under the guidance of a faculty member.

Students majoring in biology must select at least one course primarily about animals (designated A) and at least one primarily about plants (designated P) from the Biological Sciences Areas outlined below. The goal is to achieve a balanced exposure to the two kingdoms of higher organisms.

Accelerated Binary Degree Program, including BS Degree in Biology

The University of Maine, UNECOM and NECO (see above), cooperate in providing an accelerated undergraduate curriculum leading to consideration for early admission to UNECOM and NECO and the awarding of a baccalaureate degree from UMaine upon the successful completion of the first year curriculum at UNECOM and NECO. Contact the Office of Health Professions (207) 581-2587 for complete program details and a curriculum for the first three years.

BA and BS in Botany

Plants are of critical importance to the world and in human society. They are sources of useful materials, such as human and animal foods, fibers, building materials,

medicines, and horticultural specimens. They are major primary producers, the foundation for many terrestrial ecosystems and an essential matrix for other organisms in forests, savannas, marshes and many other habitats. Tremendous advances in biotechnology, environmental studies, and related areas make botany an important and fascinating field of study. Graduates of our Botany program pursue various careers, depending on their interest, level of educational attainment, and subsequent professional education. Among the more typical career areas are environmental monitoring and regulation at state and federal levels, scientific research and development, education at the high-school and college levels, and private design and consulting.

The University of Maine offers students majoring in Botany a wide range of courses covering all major areas of the field. Most of these courses include laboratories. Botany includes many areas of specialization and opportunities for students, including ecology, evolution, freshwater biology, genetics, marine botany, mycology, pathology, physiology, and systematics. Students in their third and fourth years of study, and who intend to pursue post-baccalaureate studies leading to advanced degrees, are strongly encouraged to augment their formal courses with independent research under the guidance of a Botany faculty member.

Students pursuing a major in Botany satisfy the Biological Sciences Area Requirements by selecting at least three courses primarily about plants (designated P) in the listing below.

BA and BS in Zoology

The study of zoology increases our knowledge of human biology and of the biology of many species with whom we interact and upon which we are more or less dependent. As in other fields of biology, recent developments in environmental studies, biotechnological research techniques, medicine, and related areas make the study of zoology important and fascinating. These areas are expected to continue growing and to affect our society in many ways and at many levels. Graduates of our Zoology program pursue various careers, depending on their interest, level of educational attainment, and subsequent professional education. Among the more typical career areas are scientific research and development, human and veterinary medicine, education at the high-school and college levels, environmental monitoring and regulation at state and federal levels, and private design and consulting.

The University of Maine offers students majoring in Zoology a wide range of courses in major areas of the field. Most of these courses include laboratories. Zoology includes many areas of specialization and opportunities for students, including anatomy and physiology, behavior, cell biology, ecology, entomology, evolution, fish biology, freshwater biology, genetics and development, health professions (including accelerated programs in cooperation with UNECOM and NECO), marine zoology, and systematics. Students in their third and fourth years of study, and who intend to pursue post baccalaureate studies leading to advanced degrees, are strongly encouraged to augment their formal courses with independent research under the guidance of a Zoology faculty member.

Students pursuing a major in Zoology satisfy the Biological Sciences Area Requirements by selecting at least three courses primarily about animals (designated by A) in the listing below.

The University of Maine does not offer a formal degree in fisheries, but a curriculum certified by the American Fisheries Society can be constructed from courses offered by the departments of Biological Sciences, Wildlife Ecology, and the School of Marine Sciences. Students interested in this career path should consult with their academic advisor.

Biology Club

Students majoring in any of the three biological sciences described above and Clinical Laboratory Sciences are encouraged to join the Biology Club, a student organization that promotes an interest in the biological sciences and in biological research with invited speakers, panel discussions, debates, trips, social functions, and service projects. The club also supports a local chapter of the national honor society, Beta Beta Beta.

Basic Biological Sciences for the B.A. and B.S. in Biology / Botany / Zoology

BIO 100 - Basic Biology	4
BIO 200 - Biology of Organisms	4

Note: BIO 208, Anatomy and Physiology and BIO 222 Biology: The Living Science, will not count towards degree credit for students majoring in Biology, Botany, or Zoology.

Biological Sciences Areas for the B.A. and the B.S. in Biology / Botany / Zoology

The following are minimum requirements for these 5 areas: 24 credits, 3 credits/area, and 4 lab (L) courses. The Biology B.A. and B.S. degrees require at least one animal (A) course and at least one plant (P) course from areas III - V. The Botany B.A. and B.S. degrees require at least 3 plant (P) courses from areas III - V. The Zoology B.A. and B.S. degrees require at least 3 animal (A) courses from areas III - V.

I. Cell and Molecular Biology

If only one course is selected from this area, it must be BMB 280

BIO 336 - Developmental Biology	4
BIO 438 - Morphogenesis and Differentiation	3
BIO 441 - Electron Microscopes-Theory and Use	2
BIO 450 - Histology	4
BIO 474 - Neurobiology	3
BIO 479 - Endocrinology	3
BIO 483 - Cell Biology Laboratory	1
BMB 280 - Introduction to Molecular and Cellular Biology	3
BMB 300 - General Microbiology	3
BMB 305 - General Microbiology Laboratory	2
BMB 400 - Molecular Genetics	3

L - BIO 336, BIO 450, BIO 483, BMB 305

II. Genetics and Evolution

BIO 445 - Plant Genetics	3
BIO 462 - Principles of Genetics	3
BIO 465 - Evolution	3
BMB 400 - Molecular Genetics	3
BMB 490 - Microbial Genetics	5

L - BMB 490

III. Physiology

BIO 377 - Animal Physiology	3
BIO 378 - Animal Physiology Laboratory	2
BIO 452 - Plant Physiology	3
BIO 453 - Plant Physiology Laboratory	1
BIO 479 - Endocrinology	3
BIO 483 - Cell Biology Laboratory	1
BMB 430 - Bacterial Physiology	3
BMB 431 - Bacterial Physiology Laboratory	1
BMB 440 - Introductory Immunology	3
BMB 441 - Immunology Laboratory	1
PSE 479 - Crop Ecology and Physiology	3

P - BIO 452, BIO 453, PSE 479

L - BIO 378, BIO 453, BIO 483, BMB 431, BMB 441, SMS 486

A - BIO 377, BIO 378, BIO 479, BIO 441, BMB 440, SMS 485, SMS 486

IV. Biodiversity

BIO 310 - Plant Biology	4
BIO 326 - General Entomology	4
BIO 329 - Vertebrate Biology	3
BIO 331 - Vertebrate Biology Laboratory	1
BIO 342 - Plants in Our World	3
BIO 353 - Invertebrate Zoology	4
BIO 430 - Ecology and Systematics of Aquatic Insects	4
BIO 432 - Biology of the Fungi	4
BIO 433 - Mammalogy	4

BIO 461 - Insect Biology, Taxonomy and Systematics 4
BIO 464 - Taxonomy of Vascular Plants 4
BIO 472 - Fishery Biology 3
BMB 410 - Diversity of Microorganisms 3

P - BIO 202, BIO 233, BIO 310, BIO 432, BIO 464, SMS 473
A - BIO 326, BIO 329/331, BIO 353, BIO 430, BIO 433, BIO 461, BIO 472
L - BIO 310, BIO 326, BIO 331, BIO 353, BIO 430, BIO 432, BIO 433, BIO 461, BIO 464, SMS 473

V. Ecology and Behavior
If only one course is selected from this area, it must be BIO 319, SMS 300, or WLE 200, only one of which may be taken for degree credit.
BIO 205 - Field Natural History of Maine 4
BIO 306 - Field Marine Ecology 4
BIO 319 - General Ecology 3
BIO 327 - Introductory Applied Entomology 4
BIO 329 - Vertebrate Biology 3
BIO 331 - Vertebrate Biology Laboratory 1
BIO 354 - Biology of Behavior 3
BIO 430 - Ecology and Systematics of Aquatic Insects 4
BIO 434 - Avian Biology and Ecology 4
BIO 446 - Aquatic Ecosystems: a Landscape Perspective 3
BIO 448 - Insect Pest Ecology and Management 3
BIO 455 - Biological Invasions 3
BIO 463 - River Ecology 4
BIO 468 - Limnology 3
BIO 487 - Problems in Zoology I-Field Ornithology/Field Studies 1-2
INT 482 - (BSC, PSE) Pesticides and the Environment 3
PSE 140 - Soil Science and 3
PSE 141 - Soil Science Lab 1
(accepted for Botany majors only)
PSE 320 - Soil Organic Matter Management 3
PSE 423 - Wetland Ecology and Conservation 4
PSE 457 - Plant Pathology 4
PSE 479 - Crop Ecology and Physiology 3
SMS 300 - Marine Ecology 3
SMS 306 - Field Marine Ecology 4
SMS 475 - Field Marine Ecology 4
WLE 200 - Ecology 3
WLE 201 - Ecology Laboratory 2
WLE 260 - Field Ornithology 3
WLE 280 - Winter Ecology 1
WLE 445 - Management of Endangered and Threatened Species 3

L - BIO 205, BIO 306, BIO 327, BIO 331, BIO 430, BIO 434, BIO 463, BIO 487, PSE 141, PSE 423, PSE 457, SMS 475, WLE 201, WLE 260, WLE 280

A - BIO 327, BIO 329/331, BIO 354, BIO 430, BIO 434, BIO 448, BIO 487, WLE 260, WLE 280
P - PSE 457, PSE 479

Affiliated Sciences and Math for the B.S. and B.A. in Biology / Botany / Zoology
Courses Common to both the B.A. and B.S. Degrees
CHY 121 - Introduction to Chemistry 3
CHY 122 - The Molecular Basis of Chemical Change 3
CHY 123 - Introduction to Chemistry Laboratory 1
CHY 124 - The Molecular Basis of Chemical Change Laboratory 1

Courses for the B.A. Degree Option in Biology / Botany / Zoology
BMB 221 - Organic Chemistry 3
with BMB 222 Organic Chemistry Laboratory. 1
or CHY 251 Organic Chemistry I
with CHY 253 Organic Chemistry I Laboratory
and CHY 252 Organic Chemistry II
with CHY 254 Organic Chemistry II Laboratory. 4-10
MAT 126 - Calculus I 4
or MAT 151 - Calculus for the Life Sciences 4
or MAT 232 - Principles of Statistical Inference 3
PHY 105 - Descriptive Physics 4
or PHY 111 General Physics I
with PHY 112 General Physics II 8

Courses for the B.S. Degree Option in Biology / Botany / Zoology
BMB 221 - Organic Chemistry 3
with BMB 222 Organic Chemistry Laboratory
and BMB 322 Biochemistry
with BMB 323 Introduction to Biochemistry Laboratory. 8-10
or CHY 251 Organic Chemistry I
with CHY 253 Organic Chemistry I Laboratory
and CHY 252 Organic Chemistry II
with CHY 254 Organic Chemistry II Laboratory. 8-10
MAT 126 - Calculus I 4
or MAT 151 Calculus for the Life Sciences 4
MAT 232 - Principles of Statistical Inference 3
PHY 111 - General Physics I 4
with PHY 112 General Physics II 8
or PHY 121 Physics for Engineers and Physical Scientists I
with PHY 122 Physics for Engineers and Physical Scientists II 8

Suggested curriculum for the B.A. in Biology / Botany / Zoology

First Year - First Semester
BIO 100 - Basic Biology 4
CHY 121 - Introduction to Chemistry 3
Enrollment in CHY 121 requires completion of MAT 122 or equivalent. Students who have not completed MAT 122 or its equivalent take CHY 121 in the second year.
CHY 123 - Introduction to Chemistry Laboratory 1
ENG 101 - College Composition 3
or General Education Requirement[1] 3
MAT 122 - Pre-Calculus 4
or MAT 126 Calculus. 4
or MAT 151 Calculus for the Life Sciences 4
NFA 117 - Issues and Opportunities 1

First Year - Second Semester
BIO 200 - Biology of Organisms 4
CHY 122 - The Molecular Basis of Chemical Change 3
CHY 124 - The Molecular Basis of Chemical Change Laboratory 1
ENG 101 - College Composition 3
General Education Requirement 3
or General Education Requirement[1] 3

Second Year - First Semester
BMB 221 - Organic Chemistry 3
with BMB 222 Organic Chemistry Laboratory 1
or CHY 251 Organic Chemistry I 3
with CHY 253 Organic Chemistry I Laboratory[3] 2
MAT 126 - Calculus I 4
or MAT 151 - Calculus for the Life Sciences 4
or MAT 232 - Principles of Statistical Inference 3
General Education Requirement or Elective 3
Biological Sciences Area Choice[2] 3
International Perspective[4] 3

Second Year - Second Semester
CHY 252 - Organic Chemistry II 3
CHY 254 - Organic Chemistry Laboratory II 2
International Perspective[4] 3
Biological Sciences Area Choice[2] 3-5
General Education Requirement or Elective 3
MAT 126 - Calculus I 4
or MAT 151 - Calculus for the Life Sciences 4
or MAT 232 - Principles of Statistical Inference 3

Third Year - First Semester
PHY 105 - Descriptive Physics 4
or PHY 111 General Physics I[3] 4
Biological Sciences Area Choice[2] 2-4

International Perspective[4]	3
General Education Requirement or Elective	3
Third Year - Second Semester	
PHY 112 - General Physics II	4
General Education Requirement or Elective	3-6
or Elective if PHY 105 already taken.	4
Biological Sciences Area Choice[2]	3-4
Fourth Year - First Semester	
Biological Sciences Area Choice[2]	3-4
Capstone[5] or Elective	3
General Education Requirements or Electives	7-10
Fourth Year - Second Semester	
Biological Sciences Area Choice[2]	3-10
Elective or Capstone[5]	3
General Education Requirements or Electives	3-6

Suggested curriculum for the B.S. in Biology / Botany / Zoology

First Year - First Semester	
BIO 100 - Basic Biology	4
CHY 121 - Introduction to Chemistry	3
CHY 123 - Introduction to Chemistry Laboratory	1
ENG 101 - College Composition	3
or General Education Requirement[1]	3
MAT 122 - Pre-Calculus	4
or MAT 126 - Calculus I	4
or MAT 151 - Calculus for the Life Sciences	4
NFA 117 - Issues and Opportunities	1
First Year - Second Semester	
BIO 200 - Biology of Organisms	4
CHY 122 - The Molecular Basis of Chemical Change	3
CHY 124 - The Molecular Basis of Chemical Change Laboratory	1
ENG 101 - College Composition	3
General Education Requirement	3
or General Education Requirement[1]	3
Second Year - First Semester	
CHY 251 - Organic Chemistry I[6]	3
CHY 253 - Organic Chemistry Laboratory I[6]	2
General Education Requirement or Elective	3
Biological Sciences Area Choice[2]	3
MAT 232 - Principles of Statistical Inference	3
Second Year - Second Semester	
CHY 252 - Organic Chemistry II[6]	3
CHY 254 - Organic Chemistry Laboratory II[6]	2
MAT 232 - Principles of Statistical Inference	3
General Education Requirement or Elective	3
Biological Sciences Area Choice[2]	3-5
Third Year - First Semester	
PHY 111 - General Physics I	4
General Education Requirement or Elective	6
Biological Sciences Area Choice[2]	5-7
Third Year - Second Semester	
PHY 112 - General Physics II	4
General Education Requirement or Elective	6-8
Biological Sciences Area Choice [2]	3-4
Fourth Year - First Semester	
Biological Sciences Area Choice[2]	4
Capstone[5] or Elective	3
General Education Requirements or Electives	6-9
Fourth Year - Second Semester	
Biological Sciences Area Choice[2]	4-10
Elective or Capstone[5]	3
General Education Requirements or Electives	6

[1]General Education requirements for all students at the University. If BIO 400 (Biological Sciences Writing Intensive) is used to satisfy the General Education Requirement Writing Intensive in the major requirement, then it must be taken in conjunction with a selected upper-level BIO course (see listings in Schedule of Classes), usually during the third or fourth year.

[2]See above lists of courses in five Biological Sciences Areas and follow requirements for total number of credits, number of credits per area, number of courses with laboratories (L), and number of animal (A) and plant (P) courses in areas III-V.

[3]Students not planning on a health-professions or some other career requiring graduate school may take BMB 221/222 and PHY 105 rather than CHY 251/3, CHY 252/4, and PHY 111/112.

[4]See the description of the B.A. degree above for ways to satisfy this requirement for the B.A. degree.

[5]The General Education capstone experience may be completed with BIO 387, 388, 391, 392, 402, 438, 450, 454, 475, or HON 499.

[6]Alternatively, students may take BMB 221/222 and BMB 322/323.

Clinical Laboratory Sciences

Students in Clinical Laboratory Sciences may concentrate in Medical Technology or Cytotechnology.

Medical technology prepares students for positions in the laboratory/diagnostic sector of the health professions industry and research laboratories. Students interested in the Medical Technology program must enroll as pre-medical technology students and apply for formal admission to the program after completing three semesters of study. Admission is not automatic and depends on academic performance and aptitude for the field. Medical technology students are on campus for three academic years and then spend the senior year in a twelve-month medical center practicum. The University of Maine is affiliated with the Eastern Maine Medical Center (EMMC) in Bangor. Juniors in the Medical Technology program apply directly to the EMMC program for admission to the practicum. A student must have a GPA of 2.5 overall and 2.5 in the sciences to be considered for admission to the EMMC program. EMMC reserves the right to refuse admission to students who in their judgement would not be satisfactory. After completing the practicum, students are eligible to take the certifying examination administered by the American Society of Clinical Pathology.

Cytotechnology is a specialty in clinical laboratory medicine involving the microscopic evaluation of human cells for the detection of changes indicative of various diseases, pre-cancerous conditions and cancer. Cytotechnologists are employed in clinical pathology laboratories and reference laboratories. The University of Maine is affiliated with the Fletcher Allen Health Care School of Cytotechnology at the Medical Center Hospital of Vermont, in Burlington. Students interested in the Cytotechnology program must enroll as pre-cytotechnology students and apply for formal admission to the program after completing three semesters of study. Admission is not automatic and depends upon academic performance and aptitude for the field. Cytotechnology students are on campus for three academic years and then spend the senior year in a twelve-month medical center practicum. A student must have a GPA of 2.7 overall and a GPA of 2.7 in the sciences to be considered by the Fletcher Allen Health Care School of Cytotechnology. After completing the practicum, students take the certifying examination administered by the American Society of Clinical Pathology.

For the BS in Clinical Laboratory Sciences, a minimum grade of "C-" is required in BIO 100 and BIO 208 for degree credit.

Specific Requirements

Students may earn the BS in Clinical Laboratory Sciences by completing the curriculum outlined as follows. A minimum of 16 credits of chemistry is required by the National Accrediting Agency for Clinical Laboratory Science. The senior year practicum meets the requirement for the General Education Capstone Experience.

Chemistry Requirement

BMB 221 - Organic Chemistry	3
BMB 222 - Laboratory in Organic Chemistry	1
BMB 322 - Biochemistry	3
BMB 323 - Introductory Biochemistry Laboratory	1
CHY 121 - Introduction to Chemistry	3
CHY 122 - The Molecular Basis of Chemical Change	3
CHY 123 - Introduction to Chemistry Laboratory	1
CHY 124 - The Molecular Basis of Chemical Change Laboratory	1

Suggested curriculum for the B.S. in Clinical Laboratory Sciences

Courses are arranged in the recommended sequence. See the Coordinator of the Clinical Laboratory Sciences Program for variations. BIO 400 (Biological Sciences Writing Intensive) must be taken in conjunction with a selected upper-level BIO course (see listings in Schedule of Classes), usually in the third year.

First Year - First Semester

BIO 100 - Basic Biology	4
CHY 121 - Introduction to Chemistry	3
CHY 123 - Introduction to Chemistry Laboratory	1
ENG 101 - College Composition	3
MAT 122 - Pre-Calculus	4
NFA 117 - Issues and Opportunities	1

First Year - Second Semester

Note: You may add a music performance course such as band, orchestra, choral group or dance class to increase the total by 1 credit and fulfill a General Education Requirement in Performing Art. You should be averaging 15 credits/semester.

BIO 208 - Anatomy and Physiology	4
CHY 122 - The Molecular Basis of Chemical Change	3
CHY 124 - The Molecular Basis of Chemical Change Laboratory	1
General Education Requirement	3
or General Education Requirement	3
ENG 101 - College Composition	3

Second Year - First Semester

BMB 221 - Organic Chemistry	3
BMB 222 - Laboratory in Organic Chemistry	1
BMB 300 - General Microbiology	3
BMB 305 - General Microbiology Laboratory	2
General Education Requirement	6

Second Year - Second Semester

BMB 280 - Introduction to Molecular and Cellular Biology[1]	3
BMB 322 - Biochemistry	3
BMB 323 - Introductory Biochemistry Laboratory	1
BMB 420 - Pathogenic Microbiology and Serology[1]	3
BMB 421 - Pathogenic Microbiology and Serology Laboratory[1]	1
MAT 232 - Principles of Statistical Inference	3

Third Year - First Semester

BIO 405 - Clinical Lab Methods of Infectious Disease	3
BMB 400 - Molecular Genetics	3
General Education Requirements or Electives[2]	9

Third Year - Second Semester

BMB 440 and BIO 421, respectively. This will necessitate taking BIO 438 during Mayterm.

BIO 421 - Introduction to Clinical Laboratory Methods[2]	4
BIO 483 - Cell Biology Laboratory	1
BMB 440 - Introductory Immunology[2]	3

Fourth Year

Practicum in Medical Technology at Eastern Maine Medical Center (or another accredited program) - 32 credits. Practicum in Cytotechnology at Fletcher Allen Health Care School of Cytotechnology at the Medical Center Hospital of Vermont - 33 credits (or other accredited program). Both practica satisfy the Capstone Experience.

[1]Cytotechnology students should take BIO 336 (Developmental Biology) in place of BMB 420/421

[2]Cytotechnology students should substitute BIO 438 (Morphogenesis and Differentiation) and BIO 462 (Principles of Genetics) for

Ecology and Environmental Sciences

The Bachelor of Science in Ecology and Environmental Sciences is an interdisciplinary program offered cooperatively by the faculties of the Departments of Plant, Soil and Environmental Sciences; Biological Sciences; Forest Ecosystems Science; Resource Economics and Policy; and Wildlife Ecology. Students majoring in the program are taught and advised by over twenty-five faculty from several academic departments. The program is designed for students who wish to pursue a professional career in environmental conservation, management, administration, planning, or research. The degree can also be used in preparation for postgraduate study in several disciplines related to ecology and environmental sciences.

The BS in Ecology and Environmental Sciences is designed to acquaint students with the scope and characteristics of our natural resources, and to introduce the scientific and economic principles that govern resource use and conservation.

The Ecology and Environmental Sciences curriculum is composed of seven requirement areas, amounting to at least 99 credits (depending upon selections), plus up to 21 credits reserved for unstructured electives. The requirement areas are as follows:

I. Ecology and Environmental Sciences Courses; II. Biological and Ecological Science Courses; III. Physical and Chemical Science Courses; IV. Quantitative Skills Courses; V. Communication Skills Courses; VI. Human Values and Social Context Courses; VII. Ecology and Environmental Sciences Concentration; VIII. Free Electives.

The requirements are designed so that Ecology and Environmental Sciences graduates will be well grounded in both the natural and social sciences, and will possess the skills necessary for a successful career. However, the program is also designed to allow students ample flexibility to pursue individual interests in preparing for careers or postgraduate study.

The Ecology and Environmental Sciences concentrations allow a student to pursue a particular aspect of natural resources in depth with an eye toward future employment or postgraduate study. Students should decide on their area of concentration early in their programs so that course choices in the first and sophomore years will include the prerequisites for courses in their chosen concentration.

Area I. The Ecology and Environmental Sciences Courses

EES 100 - Human Population and the Global Environment	3

EES 117 - First Year Seminar in Ecology and Environmental Sciences 1
EES 400 - Senior Paper in Ecology and Environmental Sciences 3
EES 489 - Critical Issues in Ecology and Environmental Sciences Policy 3

Area II. Biological and Ecological Sciences
BIO 100 - Basic Biology 4
BIO 200 - Biology of Organisms 4
BIO 205 - Field Natural History of Maine 4
BIO 319 - General Ecology 3
or WLE 200 - Ecology 3

Area III. Physical and Chemical Sciences
CHY 121 - Introduction to Chemistry 3
CHY 122 - The Molecular Basis of Chemical Change 3
CHY 123 - Introduction to Chemistry Laboratory 1
CHY 124 - The Molecular Basis of Chemical Change Laboratory 1
GES 101 - Introduction to Geology 4
PSE 140 - Soil Science 3
PSE 141 - Soil Science Lab 1

Area IV. Quantitative and Computer Skills
COS 101 - Introduction to PC Hardware and Windows 1
with COS 102 - Introduction to the World Wide Web 1
with COS 103 - Introduction to Spreadsheets 1
or LBR 200 - Information Literacy 3
MAT 122 - Pre-Calculus 4
or MAT 126 - Calculus I 4
or MAT 151 - Calculus for the Life Sciences 4
MAT 232 - Principles of Statistical Inference 3

Area V. Communication Skills
CMJ 103 - Fundamentals of Public Communication 3
ENG 101 - College Composition 3
ENG 317 - Business and Technical Writing 3

Area VI. Human Values and Social Context
All students in the program must earn at least 18 credits in the humanities and social sciences. These courses, which are selected in consultation with an advisor, must be chosen to meet several distributional requirements established by the University of Maine's General Education Requirements as follows:
INT 110 - (ECO, REP) Modern Economic Problems 3
PHI 232 - Environmental Ethics 3
or REP 381 - Sustainable Development Principles and Policy
POS 100 - American Government 3
Western Cultural Tradition: (Choose from approved course listing) 3
Cultural Diversity and International Perspectives: (Choose from approved course listing) 3
Artistic and Creative Expression: (Choose from approved course listing) 3

Area VII. The Ecology and Environmental Sciences Concentration (21 credits)
Each student is required to complete at least one concentration. Each concentration consists of 21 credits, at least 15 of which must be at the 300 level or above. Appropriate course choices must be made in the other six requirement areas to satisfy the prerequisites for the chosen concentration.

Several courses are listed under each of the following concentrations. Students are required to build their concentrations largely from the courses on these lists. However, with the approval of the advisor, certain courses not on a list may also be used. For seniors, certain graduate courses may be used in the concentration with approval of the student's advisor. At the beginning of the concentration listings, prerequisite courses and suggested preparatory courses are listed.

Ecology
Required Preparatory Courses:
CHY 251 - Organic Chemistry I 3
CHY 252 - Organic Chemistry II 3
CHY 253 - Organic Chemistry Laboratory I 2
CHY 254 - Organic Chemistry Laboratory II 2
MAT 126 - Calculus I 4
or MAT 151 - Calculus for the Life Sciences 4
PHY 111 - General Physics I 4
or PHY 121 - Physics for Engineers and Physical Scientists I
PHY 112 - General Physics II 4
or PHY 122 - Physics for Engineers and Physical Scientists II
PHY 121 - Physics for Engineers and Physical Scientists I 4
PHY 122 - Physics for Engineers and Physical Scientists II 4

Concentration Electives:
BIO 306 - Field Marine Ecology 4
BIO 310 - Plant Biology 4
BIO 326 - General Entomology 4
BIO 329 - Vertebrate Biology 3
BIO 331 - Vertebrate Biology Laboratory 1
BIO 353 - Invertebrate Zoology 4
BIO 377 - Animal Physiology 3
BIO 430 - Ecology and Systematics of Aquatic Insects 4
BIO 432 - Biology of the Fungi 4
BIO 446 - Aquatic Ecosystems:a Landscape Perspective 3
BIO 448 - Insect Pest Ecology and Management 3
BIO 452 - Plant Physiology 3
BIO 455 - Biological Invasions 3
BIO 461 - Insect Biology, Taxonomy and Systematics 4
BIO 464 - Taxonomy of Vascular Plants 4
BIO 468 - Limnology 3
BIO 469 - Field Limnology 1
FES 407 - Forest Ecology 3
INT 475 - (BSC, FTY, SMS, WLE) Field Studies in Ecology Ar
INT 482 - (BSC, PSE) Pesticides and the Environment 3
PSE 423 - Wetland Ecology and Conservation 4
PSE 442 - Soil Genesis, Morphology and Classification 3
PSE 444 - Field Soil Morphology and Classification Techniques 1
PSE 469 - Soil Microbiology 4
WLE 280 - Winter Ecology 1
WLE 323 - Introduction to Conservation Biology 3

Entomology
Required Concentration Course:
BIO 326 - General Entomology 4

Concentration Electives:
BIO 353 - Invertebrate Zoology 4
BIO 430 - Ecology and Systematics of Aquatic Insects 4
BIO 448 - Insect Pest Ecology and Management 3
BIO 461 - Insect Biology, Taxonomy and Systematics 4
BIO 462 - Principles of Genetics 3
BIO 464 - Taxonomy of Vascular Plants 4
INT 256 - (BSC, FES) Tree Pests and Disease 4
INT 482 - (BSC, PSE) Pesticides and the Environment 3

Environmental Sciences
Required Preparatory Courses:
CHY 251 - Organic Chemistry I 3
CHY 252 - Organic Chemistry II 3
CHY 253 - Organic Chemistry Laboratory I 2
CHY 254 - Organic Chemistry Laboratory II 2
MAT 126 - Calculus I 4
MAT 127 - Calculus II 4
PHY 111 - General Physics I 4
or PHY 121 - Physics for Engineers and Physical Scientists I
PHY 112 - General Physics II 4
or PHY 122 - Physics for Engineers and Physical Scientists II
PHY 121 - Physics for Engineers and Physical Scientists I 4
PHY 122 - Physics for Engineers and Physical Scientists II 4

Concentration Electives:
CIE 231 - Fundamentals of Environmental Engineering 3
CIE 431 - Pollutant Fate and Transport 4

EES 350 - Principles of Environmental Science 3
FES 407 - Forest Ecology 3
FTY 206 - Photogrammetry and Remote Sensing 3
FTY 457 - Forest Watershed Management 3
INT 482 - (BSC, PSE) Pesticides and the Environment 3
ISE 201 - Principles of Geographic Information Systems 3
PSE 413 - Wetland Delineation and Mapping 4
PSE 440 - Soil Chemistry and Plant Nutrition 3
PSE 442 - Soil Genesis, Morphology and Classification 3
PSE 444 - Field Soil Morphology and Classification Techniques 1
PSE 469 - Soil Microbiology 4
WLE 323 - Introduction to Conservation Biology 3

Land Use Planning
Required Concentration Course:
REP 474 - Land Use Planning 3

Concentration Electives:
BIO 446 - Aquatic Ecosystems:a Landscape Perspective 3
EES 324 - Environmental Protection Law and Policy 3
EES 424 - Environmental Assessment and Management Techniques 3
FTY 206 - Photogrammetry and Remote Sensing 3
FTY 208 - Forest Surveying and Mapping 3
FTY 349 - Principles of Forest Management 3
FTY 480 - Applied Geographic I nformation Systems 3
ISE 201 - Principles of Geographic Information Systems 3
PAA 220 - Introduction to Public Policy 3
PAA 370 - Local Government Administration 3
PSE 344 - Soil and Water Quality 3
PSE 413 - Wetland Delineation and Mapping 4
PSE 442 - Soil Genesis, Morphology and Classification 3
PSE 444 - Field Soil Morphology and Classification Techniques 1

Natural History
Concentration Electives:
BIO 306 - Field Marine Ecology 4
BIO 326 - General Entomology 4
BIO 329 - Vertebrate Biology 3
BIO 331 - Vertebrate Biology Laboratory 1
BIO 432 - Biology of the Fungi 4
BIO 446 - Aquatic Ecosystems:a Landscape Perspective 3
BIO 448 - Insect Pest Ecology and Management 3
BIO 455 - Biological Invasions 3
BIO 461 - Insect Biology, Taxonomy and Systematics 4
BIO 463 - River Ecology 4
BIO 464 - Taxonomy of Vascular Plants 4
BIO 468 - Limnology 3
BIO 469 - Field Limnology 1
FES 407 - Forest Ecology 3
INT 475 - (BSC, FTY, SMS, WLE) Field Studies in Ecology Ar
INT 482 - (BSC, PSE) Pesticides and the Environment 3
PSE 423 - Wetland Ecology and Conservation 4
PSE 442 - Soil Genesis, Morphology and Classification 3
PSE 444 - Field Soil Morphology and Classification Techniques 1
PSE 469 - Soil Microbiology 4
SMS 100 - Introduction to Ocean Science 3
WLE 280 - Winter Ecology 1
WLE 323 - Introduction to Conservation Biology 3

Resource and Environmental Policy
Required Concentration Course:
REP 371 - Introduction to Natural Resource Economics and Policy 3

Concentration Electives:
ECO 371 - Public Finance and Fiscal Policy 3
ECO 372 - State and Local Government Finance 3
EES 324 - Environmental Protection Law and Policy 3
EES 424 - Environmental Assessment and Management Techniques 3
FTY 349 - Principles of Forest Management 3
FTY 446 - Forest Resources Policy 3
GEO 201 - Introduction to Human Geography 3
HTY 479 - U.S. Environmental History 3
INT 482 - (BSC, PSE) Pesticides and the Environment 3
PAA 220 - Introduction to Public Policy 3
PAA 327 - Environmental Policy, Management and Regulation 3
PAA 340 - Public Financial Management 3
PHI 232 - Environmental Ethics 3
POS 352 - American Public Opinion 3
PSE 413 - Wetland Delineation and Mapping 4
REP 330 - Waste Management 3
REP 471 - Economics of Environmental and Resource Management 3
REP 474 - Land Use Planning 3
WLE 323 - Introduction to Conservation Biology 3

Soil and Water Sciences
Concentration Electives:
BIO 446 - Aquatic Ecosystems:a Landscape Perspective 3
BIO 468 - Limnology 3
BIO 469 - Field Limnology 1
CIE 231 - Fundamentals of Environmental Engineering 3
EES 324 - Environmental Protection Law and Policy 3
EES 350 - Principles of Environmental Science 3
FTY 206 - Photogrammetry and Remote Sensing 3
FTY 457 - Forest Watershed Management 3
FTY 480 - Applied Geographic Information Systems 3
ISE 201 - Principles of Geographic Information Systems 3
PSE 344 - Soil and Water Quality 3
PSE 403 - Weed Ecology and Management 3
PSE 413 - Wetland Delineation and Mapping 4
PSE 440 - Soil Chemistry and Plant Nutrition 3
PSE 442 - Soil Genesis, Morphology and Classification 3
PSE 444 - Field Soil Morphology and Classification Techniques 1
PSE 469 - Soil Microbiology 4

Waste Management
Required Concentration Course:
REP 330 - Waste Management 3

Concentration Electives:
CIE 231 - Fundamentals of Environmental Engineering 3
EES 324 - Environmental Protection Law and Policy 3
EES 424 - Environmental Assessment and Management Techniques 3
PAA 220 - Introduction to Public Policy 3
PSE 440 - Soil Chemistry and Plant Nutrition 3
REP 371 - Introduction to Natural Resource Economics and Policy 3
REP 474 - Land Use Planning 3

Wetland and Aquatic Ecology
Required Concentration Course:
BIO 306 - Field Marine Ecology 4
BIO 468 - Limnology 3
BIO 469 - Field Limnology 1
PSE 423 - Wetland Ecology and Conservation 4

Concentration Electives:
BIO 430 - Ecology and Systematics of Aquatic Insects 4
BIO 446 - Aquatic Ecosystems:a Landscape Perspective 3
BIO 472 - Fishery Biology 3
EES 324 - Environmental Protection Law and Policy 3
FTY 457 - Forest Watershed Management 3
FTY 480 - Applied Geographic Information Systems 3

PSE 344 - Soil and Water Quality 3
PSE 413 - Wetland Delineation and Mapping 4
SMS 211 - Introduction to Aquaculture 3
SMS 220 - Introduction to Marine Resources 2
SMS 422 - Biology of Fishes 3

Individualized Concentration

In some cases the standard concentration may not meet adequately the interests of career aspirations of students in this program. Under certain conditions, such students may develop and pursue an individualized concentration of study.

Individualized concentrations obviously must deal with some aspect of ecology and environmental sciences, as is broadly reflected in the degree program at this time. Individualized concentrations may not be developed for areas where degrees are already being offered at the University of Maine. So, for example, while "wildlife" is clearly an ecological science, this would not be an appropriate organizing concept for an individualized concentration since a degree in wildlife may be obtained from another unit of the University of Maine. Individualized concentrations, as all concentrations in the program do, require at least 21 credits of study, 15 of which must be 300 or 400 level courses.

A student wishing to pursue an individualized concentration should do so in conjunction with an advisor associated with the program. The student should prepare a brief proposal for the concentration, including a narrative explaining the organizing concept of the concentration (essentially a justification), a proposed name of the concentration, and a list of the courses that would be taken to complete the concentration. The proposal will need to be approved by the advisor, program coordinator, and Associate Dean of the College.

Area VIII. Electives (21 credits)

A free elective is any course for which the University awards academic credit. Students may use these credits to increase their professional job prospects by taking additional courses in their area of concentration or by completing course work in a second area of concentration. Some natural resource students may elect courses in foreign languages to broaden opportunities for employment or for study in other countries. Other students may wish to broaden their knowledge in the arts and humanities.

First Year - First Semester
BIO 100 - Basic Biology 4
EES 100 - Human Population and the Global Environment 3
EES 117 - First Year Seminar in Ecology and Environmental Sciences 1
ENG 101 - College Composition 3
MAT 122 - Pre-Calculus 4

First Year - Second Semester
BIO 200 - Biology of Organisms 4
GES 101 - Introduction to Geology 4
INT 110 - (ECO, REP) Modern Economic Problems 3
PSE 140 - Soil Science 3
PSE 141 - Soil Science Lab 1

Second Year - First Semester
BIO 205 - Field Natural History of Maine 4
CHY 121 - Introduction to Chemistry 3
CHY 123 - Introduction to Chemistry Laboratory 1
CMJ 103 - Fundamentals of Public Communication 3
LBR 200 - Information Literacy 3

Second Year - Second Semester
BIO 319 - General Ecology 3
MAT 232 - Principles of Statistical Inference 3
REP 381 - Sustainable Development Principles and Policy 3

Third Year - First Semester
ENG 317 - Business and Technical Writing 3
General Education Requirement: Western Cultural Tradition. 3
Elective 3
Concentration Electives 6-8

Third Year - Second Semester
Concentration Electives 6-8
Elective 3

Fourth Year - First Semester
EES 400 - Senior Paper in Ecology and Environmental Sciences 3
EES 489 - Critical Issues in Ecology and Environmental Sciences Policy 3
Free Electives 6
Concentration Elective 3-4

Fourth Year - Second Semester
Concentration Elective 3-4
Free Electives 12

Environmental Management and Policy

The Environmental Management and Policy degree program provides training in the economic, legal and policy aspects of environmental management and regulation. In consultation with their faculty advisor, students may select an area of specialization. This choice is based on the student's intended career area, or interest in further education. Four concentrations are designed specifically to train students to become effective enviromental professionals — Environmental Leadership and Communication , Enviromental Pre-Law, Policy Development and Analysis, and Quantitative Analysis. Two additional concentrations are designed specifically to train students who wish to pursue a career in the adventure recreation field — Adventure Recreation Business Management and Adventure Recreation Management.

Students in the Environmental Management and Policy program will find a strong link between teaching and research. The faculty members are devoted to their teaching and bring real world problems into the classroom In addition, many opportunities are available for students to work on departmental research projects, cooperative field experience, internships and study abroad.

Other programs offered by the Department of Resource Economics and Policy include a Resource and Agribusiness Management degree, an Agribusiness Administration Concentration, and an Equine Business Management Concentration. The Department of Resource Economics and Policy faculty also cooperates in the college's Ecology and Environmental Sciences Concentration degree as well as various graduate degree programs.

The Environmental Management and Policy program provides a broad education in economics, business and the technical areas required to manage environmental resources. In addition, all of the Department's programs help prepare students for continued education in graduate programs.

Core Courses

The concentrations are based on a core academic foundation of management and policy course work along with courses in the biological and physical sciences. Building on this core academic program, each concentration contains courses that provide students with unique professional skills.

Basic Science
recommended
BIO 100 - Basic Biology 4

CHY 121 - Introduction to Chemistry 3
with CHY 123 - Introduction to Chemistry Laboratory 1
or GES 101 - Introduction to Geology 4

Communications
CMJ 103 - Fundamentals of Public Communication 3
ENG 101 - College Composition 3
ENG 317 - Business and Technical Writing 3
or PAA 390 - Technical Writing and Communication in Public Service 3

Human Values and Social Context
INT 105 - (ECO, REP) Environmental Policy 3
POS 100 - American Government 3
Western Cultural Tradition Elective
Social Contexts and Institutions Elective
Cultural Diversity and International Perspectives Elective
Artistic and Creative Expression Elective

Ethics
PHI 232 - Environmental Ethics 3
or PHI 240 - Social and Political Philosophy 3
or PHI 244 - Philosophy of Law 3

Mathematics and Statistics and Computers
COS 101 - Introduction to PC Hardware and Windows 1
and COS 102 - Introduction to the World Wide Web 1
and COS 103 - Introduction to Spreadsheets 1
or other 3-credits of computer course or demonstrated knowledge
MAT 114 - Calculus for Business and Economics 3
and MAT 115 - Applied Mathematics for Business and Economics 3
or MAT 126 - Calculus I 4
or MAT 151 - Calculus for the Life Sciences 4
MAT 215 - Introduction to Statistics for Business and Economics 3
or MAT 232 - Principles of Statistical Inference 3

Economic Foundation Courses
ECO 120 - Principles of Microeconomics 3
ECO 121 - Principles of Macroeconomics 3
ECO 420 - Intermediate Microeconomics 3

Management and Policy
EES 324 - Environmental Protection Law and Policy 3
PAA 327 - Environmental Policy, Management and Regulation 3
REP 330 - Waste Management 3
REP 471 - Economics of Environmental and Resource Management 3
REP 474 - Land Use Planning 3
REP 489 - Senior Seminar 3

Adventure Recreation Business Management

Adventure Recreation Business Management is designed for students who want to own or operate an adventure sports business. Academic requirements include the core courses as well as BUA 201 Principles of Financial Accounting I, BUA 202 Principles of Managerial Accounting, PRT 470 Principles of Tourism Management and Planning, REP 254 Introduction to Production Economics, REP 458 Principles of Resource Business Management, REP 459 Resource Based Business Finance, REP 465 Food and Fiber Marketing or REP 466 Internet Marketing: Food and Fiber Products, and REP 468 Quantitative Analysis and Forecasting.

Adventure Recreation Management

Adventure Recreation Management is designed for students who want to work for a public agency that manages recreational resources. Academic requirements include the core courses as well as BUA 201 Principles of Financial Accounting I or PAA 409 Governmental and Nonprofit Accounting; PRT 352 Forest Recreation Management or PRT 355 Visitor Behavior and Management.

Environmental Leadership and Communication

Environmental Leadership and Communication is designed for students who wish to specialize in environmental advocacy or public relations, and work for an environmental organization, public agency, or private business. Academic requirements include the core courses as well as HTY 479 U.S. Environmental History, SOC 101 Introduction to Sociology, SOC 202 Social Problems, and SOC 302 Social Organization: The Macro Picture.

Enviromental Pre-Law

Environmental Pre-Law is designed for students who wish to pursue a career in environmental law. Academic requirements include the core courses as well as BUA 220 The Legal Environment of Business, ENG 206 Descriptive and Narrative Writing, ENG 212 Persuasive and Analytical Writing, and POS 282 Introduction to American Law.

Policy Development and Analysis

Policy Development and Analysis is designed for students who wish to work for a public agency or private business as an environmental policy analyst. Academic requirements include the core courses as well as BIO 444 Pesticides and the Environment, BUA 201 Principles of Financial Accounting I or PAA 409 Governmental and Nonprofit Accounting, and FTY 480 Applied Geographic Information Systems or SIE 271 Geographic Information Systems.

Quantitative Analysis

Quantitative Analysis is designed for students who wish to pursue a career applying mathematical and statistical methods to analyze environmental problems and assist with the design of environmental policies. Academic requirements include the core courses as well as ECO 485 Introduction to Economic Statistics and Econometrics or MAT 437 Statistical Methods in Research, FTY 480 Applied Geographic Information Systems or SIE 271 Geographic Information Systems, MAT 127 Calculus II, and MAT 228 Calculus III.

Suggested curriculum for the B.S. in Environmental Management and Policy,the Policy Development and Analysis.

This is similar to the other concentrations; however, see specific concentrations for details.

First Year - First Semester
BIO 100 - Basic Biology 4
ENG 101 - College Composition 3
NFA 117 - Issues and Opportunities 1
POS 100 - American Government 3

First Year - Second Semester
CMJ 103 - Fundamentals of Public Communication 3
ECO 121 - Principles of Macroeconomics 3
INT 105 - (ECO, REP) Environmental Policy 3
MAT 115 - Applied Mathematics for Business and Economics 3

Second Year - First Semester
BUA 201 - Principles of Financial Accounting I 3
MAT 114 - Calculus for Business and Economics 3
WLE 200 - Ecology 3
Free Elective 3
Basic Sciences Elective 3

Second Year - Second Semester
MAT 215 - Introduction to Statistics for Business and Economics 3
WLE 323 - Introduction to Conservation Biology 3
Human Values and Social Context Elective 3
Environmental and Ecological Management Elective 3
Free Elective 3

Third Year - First Semester

EES 324 - Environmental Protection Law and Policy	3
ENG 317 - Business and Technical Writing	3
or PAA 390 - Technical Writing and Communication in Public Service	3
REP 330 - Waste Management	3
or ISE 201 - Principles of Geographic Information Systems (Fall)	3
Environmental and Ecological Management and Policy Elective	3

Third Year - Second Semester

ECO 420 - Intermediate Micro-economics	3
EES 424 - Environmental Assessment and Management Techniques	3
FTY 480 - Applied Geographic Information Systems	3
REP 474 - Land Use Planning	3
Free Elective	3

Fourth Year - First Semester

PHI 232 - Environmental Ethics	3
REP 471 - Economics of Environmental and Resource Management	3
Free Elective	3
Human Values and Social Context Elective	3
Environmental and Ecological Management and Policy Elective	3

Fourth Year - Second Semester

INT 482 - (BSC, PSE) Pesticides and the Environment	3
PAA 327 - Environmental Policy, Management and Regulation	3
REP 489 - Senior Seminar	3
Free Elective	3
Environmental and Ecological Management and Policy Elective	3

Food Science and Human Nutrition

The mission of the Department of Food Science and Human Nutrition is to provide undergraduate education in three concentrations: food science, human nutrition, and food management. Each concentration prepares students for different careers in the area of food science and human nutrition.

Food Science is the application of the principles of the basic sciences to food systems. The Food Science concentration, an approved Institute of Food Technologists program, is challenging and requires a strong background in mathematics and science. Employment opportunities are excellent in the government, food industries, or institutions of higher education with starting salaries from $30,000 to $50,000 with an undergraduate degree (BS). We have thus far had 100% job placement for graduates.

Human Nutrition is the study of the effect of nutrients on people's health and the role of diet in prevention or treatment of chronic diseases. It is a challenging, diverse, rewarding and growing field that requires a strong background in science. The Human Nutrition concentration (Didactic Program in Dietetics) at the University of Maine is Accredited by the Commission on Accreditation for Dietetics Education of the American Dietetics Association. After graduation, students are eligible to apply for a dietetic internship, which leads to a Registered (RD) and/or Licensed (LD) Dietitian credential. RDs work in many different settings to assist people with planning their nutrition including: hospitals and other healthcare facilities, sports nutrition and corporate wellness programs, community and public health settings, business and industry, and private practice. Those not interested in obtaining an RD could be employed as dietary managers, nutrition educators, public health nutritionists, food service administrators, and consultants for the food and nutrition industries.

Food Management provides a unique combination of nutrition, food science and business. This option provides flexibility in planning a curriculum to suit an individual's needs. Graduates find employment in restaurants, hospitals, schools, food companies, airline catering, consultants, and marketing and business management.

Food Science and Human Nutrition majors will find that the curriculum with additional courses will meet the entrance requirements for medical, dental, and veterinary schools. For Food Science students, an additional course in physics is required. For Nutrition students, additional courses in physics, chemistry and mathematics are required.

In all concentrations, students can apply for competitive scholarships within the Department, College and through professional organizations such as the Maine Dietetic Association and American Dietetic Association, the Institute of Food Technologists, Northeast IFT Section and industry. All scholarships are based upon scholastic ability, extracurricular activities, and interests. Many students in this major have been successful in obtaining scholarships.

Students in all concentrations have the opportunity to gain valuable experience in their field by doing research with professors through for-credit independent studies course, work-study and/or work merit. Also we encourage and try to help students get summer employment in their area of interest.

The Department of Food Science and Human Nutrition is the only department in the State of Maine to provide undergraduate education in food science and human nutrition.

The courses needed for the three concentrations in the Department of Food Science and Human Nutrition are given below. Students who are interested in these programs can contact either the undergraduate coordinator or the chair of the department.

Bachelor of Science in Food Science and Human Nutrition with three concentrations—Food Science, Food Management, or Human Nutrition.

A Bachelor of Science degree in these concentrations will prepare students for professional work in either food science, food management or human nutrition. The requirements in food science and human nutrition will be sufficient for admission to graduate schools in each program. Students taking the food management requirements would be prepared for graduate school in business if they take the appropriate business courses at the undergraduate level.

Food Science and Human Nutrition

1. Satisfy general education requirements
2. Satisfy bachelor of science requirements
3. Minimum food science and human nutrition requirements: FSN 101, 103, 270, 330, 340,
4. Biology: BIO 100
5. Chemistry: CHY 121, 123, 122, 124
6. Mathematics: MAT 232
7. Computer: COS 102, COS 103, COS 104
8. Communications: ENG 101 and 317, CMJ 103
9. All FSN majors must achieve a minimum grade of C (2.0) in FSN courses

Food Management Concentration

1. Satisfy the core requirements of the Department
2. Satisfy the bachelor of science requirements
3. Biochemistry and Microbiology requirements: BMB 207, 208
4. Food Science and Human Nutrition requirements: FSN 103, 202, 238, 396, 436, 489, 520
5. Mathematics requirements: MAT 111
6. Business requirements: BUA 201, 202, 325, 350, 370
7. Economics Requirement: ECO 120, ECO 121

Food Science Concentration

1. Satisfy the core requirements of the Department
2. Satisfy the bachelor of science requirements

3. Biochemistry and Microbiology requirements: BMB 221, 222, 300, 305, 322, 323
4. Chemistry requirements: CHY 251 with lab, 252 with lab
5. Food Science and Human Nutrition requirements: FSN 436, 438, 482, 483, 489, 502, 520, 585, 587
6. Mathematics requirements: MAT 126, 127 or 400 level statistics course
7. Physics requirements: PHY 111
8. Economics: INT 110
9. Resource Economics and Policy requirement: REP 465

Human Nutrition Concentration

1. Satisfy core requirements of the Department
2. Satisfy the bachelor of science requirements
3. Biology requirements: BIO 208
4. Biochemistry and Microbiology requirements: BMB 221, 222, 300, (or FSN 238) 322, 323
5. Food Science and Human Nutrition requirements: FSN 202, 230, 301, 401, 410, 420, 430 + 3 FSN elective credits.
6. Mathematics requirement: MAT 122
7. Business requirements: BUA 201, REP 254
8. Psychology requirement: PSY 100
9. Pathophysiology Requirement: NUR 303

Suggested curriculum for the B.S. in Food Science and Human Nutrition
Food Management Concentration

First Year - First Semester
BIO 100 - Basic Biology 4
COS 102 - Introduction to the World Wide Web 1
COS 103 - Introduction to Spreadsheets 1
ECO 120 - Principles of Microeconomics 3
ENG 101 - College Composition 3
FSN 101 - Introduction to Food and Nutrition 3
NFA 117 - Issues and Opportunities 1

First Year - Second Semester
ECO 121 - Principles of Macroeconomics 3
FSN 103 - Science of Food Preparation 3
MAT 111 - College Algebra 3
Elective 5

Second Year - First Semester
BMB 207 - Fundamentals of Chemistry 4
BUA 201 - Principles of Financial Accounting I 3
CMJ 103 - Fundamentals of Public Communication 3
FSN 202 - Foodservice Management 4

Second Year - Second Semester
BMB 208 - Elementary Physiological Chemistry 4
BUA 202 - Principles of Managerial Accounting 3
FSN 238 - Applied Food Microbiology and Sanitation 3
Electives 3
General Education - Artistic and Creative Expression 3

Third Year - First Semester
ENG 317 - Business and Technical Writing 3
FSN 270 - World Food and Nutrition 3
FSN 330 - Introduction to Food Science 3
FSN 340 - Food Processing Laboratory 1
Electives 5

Third Year - Second Semester
BUA 350 - Business Finance 3
FSN 396 - Field Experience in Food Science and Human Nutrition 1-16
MAT 232 - Principles of Statistical Inference 3
Electives. 3
General Education - Western Cultural Tradition 3

Fourth Year - First Semester
BUA 325 - Principles of Management and Organization 3
BUA 370 - Marketing 3
FSN 520 - Food Product Development 3
Electives 6

Fourth Year - Second Semester
FSN 436 - Food Law 3
FSN 489 - Senior Project in Food Science and Human Nutrition Ar
Electives 9

Suggested curriculum for the B.S. in Food Science and Human Nutrition—Food Science Concentration

First Year - First Semester
CHY 121 - Introduction to Chemistry 3
CHY 123 - Introduction to Chemistry Laboratory 1
ENG 101 - College Composition 3
FSN 101 - Introduction to Food and Nutrition 3
MAT 126 - Calculus I 4
NFA 117 - Issues and Opportunities 1

First Year - Second Semester
CHY 122 - The Molecular Basis of Chemical Change 3
CHY 124 - The Molecular Basis of Chemical Change Laboratory 1
CMJ 103 - Fundamentals of Public Communication 3
FSN 103 - Science of Food Preparation 3
MAT 127 - Calculus II 4

Second Year - First Semester
BIO 100 - Basic Biology 4
BMB 221 - Organic Chemistry 3
and BMB 222 - Laboratory in Organic Chemistry 1
or CHY 251 - Organic Chemistry I 3
and CHY 253 - Organic Chemistry Laboratory I 2
FSN 330 - Introduction to Food Science 3
FSN 340 - Food Processing Laboratory 1
General Education - Western Cultural Tradition. 3

Second Year - Second Semester
COS 102 - Introduction to the World Wide Web 1
COS 103 - Introduction to Spreadsheets 1
FSN 270 - World Food and Nutrition 3
INT 110 - (ECO, REP) Modern Economic Problems 3
Electives. 5
General Education - Artistic and Creative Expression 3

Third Year - First Semester
BMB 300 - General Microbiology 3
BMB 305 - General Microbiology Laboratory 2
ENG 317 - Business and Technical Writing 3
PHY 111 - General Physics I 4
Electives 3

Third Year - Second Semester
BMB 322 - Biochemistry 3
BMB 323 - Introductory Biochemistry Laboratory 1
FSN 436 - Food Law 3
FSN 438 - Food Microbiology 4
MAT 232 - Principles of Statistical Inference 3

Fourth Year - First Semester
FSN 489 - Senior Project in Food Science and Human Nutrition Ar
FSN 502 - Food Preservation 3
FSN 520 - Food Product Development 3
REP 465 - Food and Fiber Marketing 3
Electives. 4

Fourth Year - Second Semester
FSN 482 - Food Chemistry 3
FSN 483 - Food Chemistry Laboratory 1
FSN 489 - Senior Project in Food Science and Human Nutrition Ar
FSN 585 - Sensory Evaluation of Foods 3
FSN 587 - Food Analysis 3
Electives 3

Suggested curriculum for the B.S. in Food Science and Human Nutrition—Human Nutrition Concentration

First Year - First Semester

BIO 100 - Basic Biology	4
ENG 101 - College Composition	3
FSN 101 - Introduction to Food and Nutrition	3
MAT 122 - Pre-Calculus	4
NFA 117 - Issues and Opportunities	1

First Year - Second Semester

BIO 208 - Anatomy and Physiology	4
CMJ 103 - Fundamentals of Public Communication	3
COS 102 - Introduction to the World Wide Web	1
COS 103 - Introduction to Spreadsheets	1
FSN 103 - Science of Food Preparation	3
Elective	3

Second Year - First Semester

CHY 121 - Introduction to Chemistry	3
CHY 123 - Introduction to Chemistry Laboratory	1
FSN 202 - Foodservice Management	4
Elective	4
General Education - Western Cultural Tradition	3

Second Year - Second Semester

BUA 201 - Principles of Financial Accounting I	3
CHY 122 - The Molecular Basis of Chemical Change	3
CHY 124 - The Molecular Basis of Chemical Change Laboratory	1
FSN 230 - Nutritional and Medical Terminology	1
FSN 238 - Applied Food Microbiology and Sanitation	3
Elective	4

Third Year - First Semester

BMB 221 - Organic Chemistry	3
BMB 222 - Laboratory in Organic Chemistry	1
FSN 301 - Life Cycle Nutrition	3
FSN 330 - Introduction to Food Science	3
FSN 340 - Food Processing Laboratory	1
Elective	4

Third Year - Second Semester

BMB 322 - Biochemistry	3
BMB 323 - Introductory Biochemistry Laboratory	1
ENG 317 - Business and Technical Writing	3
FSN 410 - Human Nutrition and Metabolism	3
MAT 232 - Principles of Statistical Inference	3
PSY 100 - General Psychology	3

Fourth Year - First Semester

FSN 270 - World Food and Nutrition	3
NUR 303 - Pathophysiology	3
REP 254 - Introduction to Production Economics	3
General Education - Artistic and Creative Expression	3
Elective	3

Fourth Year - Second Semester

FSN 401 - Community Nutrition	4
FSN 420 - Abnormal Nutrition	4
FSN 430 - Counseling and Diet Therapy	3
FSN 436 - Food Law	3

Forest Ecosystem Science

As pressures intensify among competing interests for use of the world's resources, society is becoming increasingly aware of how valuable forest ecosystems are for protecting the economic and biological health of our planet. Unraveling the biological complexity of forest ecosystems relies on a strong foundation of knowledge in the natural sciences. To that end, the undergraduate program in Forest Ecosystem Science (FES) is designed to provide students with the breadth and depth of understanding required to become active participants in promoting the sustainability of our forests in the future.

The FES program is a partner to the long established Forestry program at the University of Maine. While the Forestry program focuses on the management of forests, the FES program emphasizes the biology of forest ecosystems from the molecular to the biosphere level. Examples of career opportunities which may be open to graduates of the FES program include monitoring and assessment of forest ecosystems, consulting on environmental issues, working with forest scientists doing research in private or public forests, and pursuing graduate studies in such areas as ecology, silviculture, forest health, tree improvement, or tree physiology.

Maine is the most forested state in the country and provides an ideal setting for studies in Forest Ecosystem Science. Teaching and research take advantage of the 1,700 acre Dwight B. Demeritt Forest located adjacent to campus and the 4,000-acre Penobscot Experimental Forest located in nearby Bradley. The latter is home to the Forest Ecosystem Research Project, an effort to develop innovative approaches for managing forests in ways that more closely mimic the natural system. On campus are greenhouse, laboratory, and computer facilities that enhance the opportunities to investigate and learn about trees and forests. As a result, the University of Maine is a recognized center for research on trees and forest ecosystems. This provides students in FES many opportunities for working with faculty on research projects and for developing their own research as part of their senior project.

The following undergraduate degree program is offered through the Department of Forest Ecosystem Science. Interested students may contact the department chair for more information.

Bachelor of Science in Forest Ecosystem Science

The bachelor of science degree in forest ecosystem science prepares the student for a scientific career in understanding and working with forests, and it is an excellent preparation for graduate studies. Core courses in forest resources cover topics such as forest biology, forest ecology, and silviculture. Supporting courses in basic sciences and mathematics are required in areas such as botany, chemistry, and statistics. Students in the FES program select additional elective courses to develop depth in areas such as applied forest ecology, forest health, forest soils, plant genetics, anatomy and physiology. Elective courses are also used to meet General Education Requirements for other subjects in the humanities and social sciences.

Requirements

1. Satisfy general education requirements.
2. Forest Ecosystem Science (FES): 100, 407, 408, 409, 416, 498, 499, and INT 256
3. Forestry (FTY): 101, 105, 107, 415
4. Biology (BIO): 310, 452, 453
5. Organic Chemistry: BMB 221
6. Chemistry (CHY): 121, 122, 123, 124
7. Physics (PHY): 111
8. Plant, Soil, and Environmental Sciences (PSE): 140/141 or 250
9. Mathematics: MAT 151 or WLE 220, MAT 232 or FTY 104
10. Economics: INT 110
11. English (ENG): 101
12. Elective courses needed to attain 120 credits.

Suggested Elective Courses for B.S. in Forest Ecosystem Science

PLEASE NOTE: The following courses are not required. The list represents courses that are recommended as possible elective courses. The list exists only to aid the student and advisor in decisions concerning possible elective courses, and is not exhaustive. General Elective courses are to be chosen from the elective credits.

3. Biochemistry and Microbiology requirements: BMB 221, 222, 300, 305, 322, 323
4. Chemistry requirements: CHY 251 with lab, 252 with lab
5. Food Science and Human Nutrition requirements: FSN 436, 438, 482, 483, 489, 502, 520, 585, 587
6. Mathematics requirements: MAT 126, 127 or 400 level statistics course
7. Physics requirements: PHY 111
8. Economics: INT 110
9. Resource Economics and Policy requirement: REP 465

Human Nutrition Concentration

1. Satisfy core requirements of the Department
2. Satisfy the bachelor of science requirements
3. Biology requirements: BIO 208
4. Biochemistry and Microbiology requirements: BMB 221, 222, 300, (or FSN 238) 322, 323
5. Food Science and Human Nutrition requirements: FSN 202, 230, 301, 401, 410, 420, 430 + 3 FSN elective credits.
6. Mathematics requirement: MAT 122
7. Business requirements: BUA 201, REP 254
8. Psychology requirement: PSY 100
9. Pathophysiology Requirement: NUR 303

Suggested curriculum for the B.S. in Food Science and Human Nutrition
Food Management Concentration

First Year - First Semester
BIO 100 - Basic Biology 4
COS 102 - Introduction to the World Wide Web 1
COS 103 - Introduction to Spreadsheets 1
ECO 120 - Principles of Microeconomics 3
ENG 101 - College Composition 3
FSN 101 - Introduction to Food and Nutrition 3
NFA 117 - Issues and Opportunities 1

First Year - Second Semester
ECO 121 - Principles of Macroeconomics 3
FSN 103 - Science of Food Preparation 3
MAT 111 - College Algebra 3
Elective 5

Second Year - First Semester
BMB 207 - Fundamentals of Chemistry 4
BUA 201 - Principles of Financial Accounting I 3
CMJ 103 - Fundamentals of Public Communication 3
FSN 202 - Foodservice Management 4

Second Year - Second Semester
BMB 208 - Elementary Physiological Chemistry 4
BUA 202 - Principles of Managerial Accounting 3
FSN 238 - Applied Food Microbiology and Sanitation 3
Electives 3
General Education - Artistic and Creative Expression 3

Third Year - First Semester
ENG 317 - Business and Technical Writing 3
FSN 270 - World Food and Nutrition 3
FSN 330 - Introduction to Food Science 3
FSN 340 - Food Processing Laboratory 1
Electives 5

Third Year - Second Semester
BUA 350 - Business Finance 3
FSN 396 - Field Experience in Food Science and Human Nutrition 1-16
MAT 232 - Principles of Statistical Inference 3
Electives. 3
General Education - Western Cultural Tradition 3

Fourth Year - First Semester
BUA 325 - Principles of Management and Organization 3
BUA 370 - Marketing 3
FSN 520 - Food Product Development 3
Electives 6

Fourth Year - Second Semester
FSN 436 - Food Law 3
FSN 489 - Senior Project in Food Science and Human Nutrition Ar
Electives 9

Suggested curriculum for the B.S. in Food Science and Human Nutrition—Food Science Concentration

First Year - First Semester
CHY 121 - Introduction to Chemistry 3
CHY 123 - Introduction to Chemistry Laboratory 1
ENG 101 - College Composition 3
FSN 101 - Introduction to Food and Nutrition 3
MAT 126 - Calculus I 4
NFA 117 - Issues and Opportunities 1

First Year - Second Semester
CHY 122 - The Molecular Basis of Chemical Change 3
CHY 124 - The Molecular Basis of Chemical Change Laboratory 1
CMJ 103 - Fundamentals of Public Communication 3
FSN 103 - Science of Food Preparation 3
MAT 127 - Calculus II 4

Second Year - First Semester
BIO 100 - Basic Biology 4
BMB 221 - Organic Chemistry 3
and BMB 222 - Laboratory in Organic Chemistry 1
or CHY 251 - Organic Chemistry I 3
and CHY 253 - Organic Chemistry Laboratory I 2
FSN 330 - Introduction to Food Science 3
FSN 340 - Food Processing Laboratory 1
General Education - Western Cultural Tradition. 3

Second Year - Second Semester
COS 102 - Introduction to the World Wide Web 1
COS 103 - Introduction to Spreadsheets 1
FSN 270 - World Food and Nutrition 3
INT 110 - (ECO, REP) Modern Economic Problems 3
Electives. 5
General Education - Artistic and Creative Expression 3

Third Year - First Semester
BMB 300 - General Microbiology 3
BMB 305 - General Microbiology Laboratory 2
ENG 317 - Business and Technical Writing 3
PHY 111 - General Physics I 4
Electives 3

Third Year - Second Semester
BMB 322 - Biochemistry 3
BMB 323 - Introductory Biochemistry Laboratory 1
FSN 436 - Food Law 3
FSN 438 - Food Microbiology 4
MAT 232 - Principles of Statistical Inference 3

Fourth Year - First Semester
FSN 489 - Senior Project in Food Science and Human Nutrition Ar
FSN 502 - Food Preservation 3
FSN 520 - Food Product Development 3
REP 465 - Food and Fiber Marketing 3
Electives. 4

Fourth Year - Second Semester
FSN 482 - Food Chemistry 3
FSN 483 - Food Chemistry Laboratory 1
FSN 489 - Senior Project in Food Science and Human Nutrition Ar
FSN 585 - Sensory Evaluation of Foods 3
FSN 587 - Food Analysis 3
Electives 3

Suggested curriculum for the B.S. in Food Science and Human Nutrition—Human Nutrition Concentration

First Year - First Semester

BIO 100 - Basic Biology	4
ENG 101 - College Composition	3
FSN 101 - Introduction to Food and Nutrition	3
MAT 122 - Pre-Calculus	4
NFA 117 - Issues and Opportunities	1

First Year - Second Semester

BIO 208 - Anatomy and Physiology	4
CMJ 103 - Fundamentals of Public Communication	3
COS 102 - Introduction to the World Wide Web	1
COS 103 - Introduction to Spreadsheets	1
FSN 103 - Science of Food Preparation	3
Elective	3

Second Year - First Semester

CHY 121 - Introduction to Chemistry	3
CHY 123 - Introduction to Chemistry Laboratory	1
FSN 202 - Foodservice Management	4
Elective	4
General Education - Western Cultural Tradition	3

Second Year - Second Semester

BUA 201 - Principles of Financial Accounting I	3
CHY 122 - The Molecular Basis of Chemical Change	3
CHY 124 - The Molecular Basis of Chemical Change Laboratory	1
FSN 230 - Nutritional and Medical Terminology	1
FSN 238 - Applied Food Microbiology and Sanitation	3
Elective	4

Third Year - First Semester

BMB 221 - Organic Chemistry	3
BMB 222 - Laboratory in Organic Chemistry	1
FSN 301 - Life Cycle Nutrition	3
FSN 330 - Introduction to Food Science	3
FSN 340 - Food Processing Laboratory	1
Elective	4

Third Year - Second Semester

BMB 322 - Biochemistry	3
BMB 323 - Introductory Biochemistry Laboratory	1
ENG 317 - Business and Technical Writing	3
FSN 410 - Human Nutrition and Metabolism	3
MAT 232 - Principles of Statistical Inference	3
PSY 100 - General Psychology	3

Fourth Year - First Semester

FSN 270 - World Food and Nutrition	3
NUR 303 - Pathophysiology	3
REP 254 - Introduction to Production Economics	3
General Education - Artistic and Creative Expression	3
Elective	3

Fourth Year - Second Semester

FSN 401 - Community Nutrition	4
FSN 420 - Abnormal Nutrition	4
FSN 430 - Counseling and Diet Therapy	3
FSN 436 - Food Law	3

Forest Ecosystem Science

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The following undergraduate degree program is offered through the Department of Forest Ecosystem Science. Interested students may contact the department chair for more information.

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The bachelor of science degree in forest ecosystem science prepares the student for a scientific career in understanding and working with forests, and it is an excellent preparation for graduate studies. Core courses in forest resources cover topics such as forest biology, forest ecology, and silviculture. Supporting courses in basic sciences and mathematics are required in areas such as botany, chemistry, and statistics. Students in the FES program select additional elective courses to develop depth in areas such as applied forest ecology, forest health, forest soils, plant genetics, anatomy and physiology. Elective courses are also used to meet General Education Requirements for other subjects in the humanities and social sciences.

Requirements

1. Satisfy general education requirements.
2. Forest Ecosystem Science (FES): 100, 407, 408, 409, 416, 498, 499, and INT 256
3. Forestry (FTY): 101, 105, 107, 415
4. Biology (BIO): 310, 452, 453
5. Organic Chemistry: BMB 221
6. Chemistry (CHY): 121, 122, 123, 124
7. Physics (PHY): 111
8. Plant, Soil, and Environmental Sciences (PSE): 140/141 or 250
9. Mathematics: MAT 151 or WLE 220, MAT 232 or FTY 104
10. Economics: INT 110
11. English (ENG): 101
12. Elective courses needed to attain 120 credits.

Suggested Elective Courses for B.S. in Forest Ecosystem Science

PLEASE NOTE: The following courses are not required. The list represents courses that are recommended as possible elective courses. The list exists only to aid the student and advisor in decisions concerning possible elective courses, and is not exhaustive. General Elective courses are to be chosen from the elective credits.

Applied Forest Ecology

BIO 100 - Basic Biology	4
BIO 319 - General Ecology	3
BIO 568 - Advanced Plant Ecology	4
FES 435 - Managing Forest Succession	3
FES 508 - The Industrial Spruce-Fir Ecosystem	4
FES 535 - Managing Forest Succession	3
FES 536 - Forest Stand Dynamics	3
FTY 410 - Artificial Regeneration	3
FTY 415 - Forest Genetics	3
FTY 457 - Forest Watershed Management	3
FTY 532 - Forest Influences	2
INT 525 - (BSC, CHB, FTY) Tropical Deforestation Seminar	1 or 2
WLE 230 - Introduction to Wildlife Conservation	3
WLE 323 - Introduction to Conservation Biology	3
WLE 555 - Landscape Ecology and Conservation	1

Forest Health

BIO 326 - General Entomology	4
BIO 327 - Introductory Applied Entomology	4
BIO 432 - Biology of the Fungi	4
BIO 448 - Insect Pest Ecology and Management	3
PSE 403 - Weed Ecology and Management	3
PSE 457 - Plant Pathology	4

Plant Physiology, Anatomy, and Genetics

BIO 464 - Taxonomy of Vascular Plants	4
BIO 465 - Evolution	3
BIO 480 - Cell Biology	3
BMB 208 - Elementary Physiological Chemistry	4
BMB 300 - General Microbiology	3
BMB 322 - Biochemistry	3
BMB 460 - Advanced Biochemistry	3
FES 520 - Developmental Physiology of Woody Plants	3
WSC 212 - Introduction to Wood Science and Technology	3
WSC 213 - Hand Lens Identification of Wood Laboratory	1

The Physical Environment

GES 101 - Introduction to Geology	4
GES 102 - Environmental Geology of Maine	4
GES 441 - Principles of Glacial Geology	3
PSE 440 - Soil Chemistry and Plant Nutrition	3
PSE 442 - Soil Genesis, Morphology and Classification	3
PSE 444 - Field Soil Morphology and Classification Techniques	1

Mathematics

MAT 437 - Statistical Methods in Research	3
PSE 509 - Experimental Design	4

Suggested curriculum for B.S. in Forest Ecosystem Science

First Year - First Semester

ENG 101 - College Composition	3
FES 100 - Introduction to Forest Biology	4
FTY 101 - Introduction to Forest Resources	1
FTY 107 - Forest Vegetation[1]	4
MAT 122 - Pre-Calculus[2]	4

First Year - Second Semester

FTY 105 - Introduction to Forest Measurements	3
INT 110 - (ECO, REP) Modern Economic Problems	3
MAT 232 - Principles of Statistical Inference[3]	3
Electives.	6

Second Year - First Semester

CHY 121 - Introduction to Chemistry	3
CHY 123 - Introduction to Chemistry Laboratory	1
PHY 111 - General Physics I[4]	4
Elective	6

Second Year - Second Semester

CHY 122 - The Molecular Basis of Chemical Change	3
CHY 124 - The Molecular Basis of Chemical Change Laboratory	1
INT 256 - (BSC, FES) Tree Pests and Disease	4
PSE 140 - Soil Science[5]	3
PSE 141 - Soil Science Lab	1
Elective	3

Third Year - First Semester

FES 407 - Forest Ecology	3
FES 408 - Silviculture	3
FES 409 - Forest Ecology and Silviculture Field Laboratory	2
Elective	6

Third Year - Second Semester

BIO 310 - Plant Biology	4
FES 416 - Functional Structure of Woody Plants	3
FES 498 - Senior Research I	2
WLE 220 - Introduction to Statistical Ecology	4
Elective[6]	3

Fourth Year - First Semester

BIO 452 - Plant Physiology	3
BIO 453 - Plant Physiology Laboratory	1
BMB 221 - Organic Chemistry[7]	3
FES 499 - Senior Research II	2
Electives	6

Fourth Year - Second Semester

FTY 415 - Forest Genetics[8]	3
Electives	12

[1]BIO 464 - Taxonomy of Vascular Plants may be substituted, with advisor consent

[2]If a placement test indicates that MAT 122- Pre-calculus is not needed, then another elective can be scheduled

[3]FTY 104 - Statistical Inference for Forest Management may be substituted, with advisor consent

[4]GES 101 - Introduction to Geology may be substituted, with advisor consent

[5]PSE 250 - Forest Soil Science may be substituted, with advisor consent

[6]MAT 151, MAT 126, or MAT 437 may be substituted with advisor consent

[7]CHY 251 - Organic Chemistry I may be substituted with advisor consent

[8]BIO 445 - Plant Genetics may be substituted, with advisor consent

Forest Operations Science

The efficient and environmentally acceptable growth, management, extraction, and transportation of timber for the manufacture of paper, wood composites, and solid wood products is a major challenge to one of the region's most important industries. The interdisciplinary Bachelor of Science in Forest Operations Science (FSC) at the University of Maine has been designed to address this challenge by combining course work and faculty expertise in forest ecology, forest management, wood science, forest engineering, and introductory business administration.

The program aims to develop individuals (a) with the knowledge and abilities to better manage timber resources and forest operations in an environment of increasing public scrutiny and environmental concern; (b) with an understanding of the processes and challenges related to the efficient and environmentally acceptable harvest and primary processing of timber resources; and (c) with an appreciation for the local, regional, and global competition for forest product raw materials and markets. Graduates of the program will develop critical and analytical knowledge and skills related to the efficient, safe, and environmentally compatible conduct and management of forest operations, as well as a thorough understanding of the timber growth and production cycle from the forest to the mill.

Recognizing the significance of the forest products industries to society, as well as the opportunities for professional employment of highly trained and broadly educated college graduates, the FSC program is designed to provide students with relevant and marketable knowledge and proficiencies in subject areas essential to the conduct of forest

operations from the forest to the wood yard. These include forest ecology and silviculture, timber harvest planning and administration; forest road planning and construction; timber appraisal and acquisition; and forest management, wood science, forest engineering, and introductory business administration in the overall context of a broad education in the liberal arts. The result is a program addressing the science, management, business, and processing of timber resources.

Graduates of the FSC program will be prepared for careers in industrial and consulting forestry, as well as in the administration and supervision of wood processing facilities. Specific career areas include: forest land management; wood appraisal and procurement; forest road planning and design; harvest planning and administration; and mill supervision and wood products marketing. Opportunities also exist for graduate education at both the M.S. and Ph.D. levels in the areas of forest operations, wood science, and forest management.

The B.S. in Forest Operations Science program is accredited by the Society of American Foresters. The Society is recognized by the Commission of Recognition of Postsecondary Accreditation as the specialized accrediting body for forestry in the United States. Accreditation by the Society of Wood Science and Technology is pending.

Suggested curriculum for the B.S. in Forest Operations Science

First Year - First Semester

ENG 101 - College Composition	3
FES 100 - Introduction to Forest Biology	4
FTY 101 - Introduction to Forest Resources	1
FTY 107 - Forest Vegetation	4
FTY 241 - Field Practice in Forest Management	3
PHY 111 - General Physics I	4

First Year - Second Semester

FTY 104 - Statistical Inference for Forest Management	3
or MAT 232 - Principles of Statistical Inference	3
FTY 105 - Introduction to Forest Measurements	3
INT 110 - (ECO, REP) Modern Economic Problems	3
MAT 126 - Calculus I	4
or MAT 151 - Calculus for the Life Sciences	4
Elective	3

Second Year - First Semester

CHY 121 - Introduction to Chemistry	3
CHY 123 - Introduction to Chemistry Laboratory	1
FSC 301 - Forest Machinery	3
FTY 208 - Forest Surveying and Mapping	3
PSE 250 - Forest Soil Science	3
WSC 212 - Introduction to Wood Science and Technology	3
WSC 213 - Hand Lens Identification of Wood Laboratory	1

Second Year - Second Semester

FTY 206 - Photogrammetry and Remote Sensing	3
FTY 266 - Advanced Forest Measurements	3
FTY 480 - Applied Geographic Information Systems	3
Business Elective	3
Communications Elective	3

Third Year - First Semester

FES 407 - Forest Ecology	3
FES 408 - Silviculture	3
FES 409 - Forest Ecology and Silviculture Field Laboratory	2
FSC 401 - Timber Harvesting	3
Elective	5

Third Year - Second Semester

FSC 300 - Forest Products Protection	4
FTY 444 - Forest Resources Economics	3
FTY 457 - Forest Watershed Management	3
WSC 425 - Mechanical Properties of Wood	3
Business Elective	3

Fourth Year - First Semester

FSC 403 - Forest Roads	3
FSC 405 - Timber Appraisal and Acquisition	2
FTY 476 - Forest Management I	4
WSC 314 - Wood and Wood-Fiber Processing	4
Elective	3

Fourth Year - Second Semester

FSC 408 - Forest Operations Planning and Analysis	3
FTY 446 - Forest Resources Policy	3
FTY 540 - Forest Products Marketing	3
WSC 410 - Mill Tour	1
Electives	6

Forestry

Forestry is an applied science that involves managing forest ecosystems within increasingly complex social environments. It combines forest ecosystem sciences, management sciences, and communications skills for managing forest resources to meet society's ever-increasing needs for desired products, services, and forest conditions.

A forester is a professional who must understand the many different aspects of managing natural and human elements of forest systems. Forestry requires a broad education. Biological and physical sciences deal with the complex interactions of forest ecosystems. Social sciences provide understanding of how humans value forest conditions and forest-based products and services. Management sciences help foresters to match human needs and desires with the sustainable capabilities of forests. A forestry student faces a challenging and stimulating education.

The University of Maine has the longest, continuously accredited professional forestry program in the United States. We will celebrate the 100th Anniversary of the program in 2003. Forestry, Forest Operations Science and the Master of Forestry program are the only programs in Maine that are accredited by the Society of American Foresters as first degrees in professional forestry. The goal of the Bachelor of Science degree program at the University of Maine is to combine instruction in 1) the basic sciences and liberal arts that are fundamental to a college education, 2) practical forestry skills that will allow a graduate to compete for entry-level positions, and 3) fundamentals of applied forest resources and management sciences on which graduates can build throughout their careers.

The BS in Forestry curriculum requires completion of 128 credits of coursework. In addition to the University's general education requirements in science, human values, communications, mathematics, and ethics, the curriculum includes forest-oriented courses in biology, soil science, measurements, mapping, inventory, protection, ecology, tree culture, economics, policy, and administration. These are combined into an integrated approach to the management of forests for desired, sustainable conditions that respond to society's demands for a healthy forest environment, wood-based products, wildlife habitat, recreational opportunities, and water resources.

The Forestry program at the University of Maine retains a strong field orientation. Training in a forest setting begins with the first semester. The University's 1270-acre Dwight B. DeMeritt Forest is adjacent to the campus. Together with the nearby Penobscot Experimental Forest, this property is part of

nearly 10,000 acres of forestland, owned by the University, that provide living laboratories for forestry education and research. Large areas of public and private, industrial, and non-industrial forestland near the University provide additional opportunities. Students are strongly encouraged to take advantage of the numerous opportunities for summer employment with public and private land-management organizations.

Students in the Forestry program have an opportunity to study, interact, and often work with the large number of graduate students from around the world who have been attracted to forest-related studies at the University of Maine. The forestry faculty members are involved in active research programs, as well as teaching. Students learn from teachers who, themselves, continually explore and extend the latest knowledge in their areas of forest science. Faculty members are assigned between 10 and 15 undergraduate students for academic advising.

The Forestry program provides a very broad education that allows foresters to seek employment in a wide range of positions, but most work with some aspect of forest resources management. Federal agencies, such as the United States Forest Service, the Bureau of Land Management, and the National Park Service employ many foresters. State natural resources agencies hire foresters to manage state forestlands and to provide advice to owners of small woodland properties. Non-governmental conservation organizations employ foresters to further the interests of their programs. Especially in Maine, which has more industrial forest acreage than any other state, forest industry is a major employer. An increasing number of forestry graduates become independent consultants, serving mostly non-industrial private forestland owners such as the thousands who own more than half of Maine's timberland.

The B.S. in Forestry program is accredited by the Society of American Foresters. The Society is recognized by the Commission on Recognition of Postsecondary Accreditation as the specialized accrediting body for forestry in the United States.

Suggested curriculum for the B.S. in Forestry

First Year - First Semester

ENG 101 - College Composition	3
FES 100 - Introduction to Forest Biology	4
FTY 101 - Introduction to Forest Resources	1
FTY 107 - Forest Vegetation	4
MAT 122 - Pre-Calculus[1]	4

First Year - Second Semester

CMJ 103 - Fundamentals of Public Communication	3
FTY 104 - Statistical Inference for Forest Management	3
FTY 105 - Introduction to Forest Measurements	3
INT 110 - (ECO, REP) Modern Economic Problems	3
WLE 230 - Introduction to Wildlife Conservation	3

First Year - May Term

FTY 241 - Field Practice in Forest Management	3

Second Year - First Semester

CHY 121 - Introduction to Chemistry	3
CHY 123 - Introduction to Chemistry Laboratory	1
FTY 208 - Forest Surveying and Mapping	3
PSE 250 - Forest Soil Science	3
WSC 212 - Introduction to Wood Science and Technology	3
and WSC 213 - Hand Lens Identification of Wood Laboratory	1
or WSC 314 - Wood and Wood-Fiber Processing	4
Elective	3

Second Year - Second Semester

FTY 206 - Photogrammetry and Remote Sensing	3
FTY 266 - Advanced Forest Measurements	3
INT 256 - (BSC, FES) Tree Pests and Disease	4
Chemistry/Physics Elective[2]	4
Elective	3

Third Year - First Semester

FES 407 - Forest Ecology	3
FES 408 - Silviculture	3
FES 409 - Forest Ecology and Silviculture Field Laboratory	2
FSC 401 - Timber Harvesting	3
Elective	3

Third Year - Second Semester

FTY 444 - Forest Resources Economics	3
FTY 457 - Forest Watershed Management	3
FTY 480 - Applied Geographic Information Systems	3
Electives	5

Fourth Year - First Semester

FTY 476 - Forest Management I	4
PRT 352 - Forest Recreation Management	3
Elective	9

Fourth Year - Second Semester

FTY 446 - Forest Resources Policy	3
FTY 477 - Forest Management II	4
Elective	6
Directed Elective[3]	3

[1]MAT 126 or MAT 151 (calculus) are strongly recommended for students interested in courses that have a calculus prerequisite or who are considering graduate studies.

[2]The CHY/PHY elective must be CHY 122/124 or higher (BMB 221 is acceptable), or PHY 111 or higher (PHY 107 acceptable by exception only).

[3]The Directed Elective must be a 400-level, 3-credit course from FES, FSC, FTY, PRT, or WSC.

Total elective credits: 32 (a maximum of 12 of which are needed to cover the University General Education Requirements that are not already included in the basic curriculum).

Geological Sciences

The geological sciences are concerned with the physical and chemical characteristics of minerals, rocks, ice and water, with their occurrence, arrangement, and surface expression, and with the history of the Earth and its inhabitants. The curriculum provides for a basic understanding of the geological sciences and is sufficiently flexible to allow students with interests in environmental geology, geochemistry, geophysics, paleontology, and oceanography to pursue additional courses in appropriate ancillary sciences.

The Department of Geological Sciences offers a wide variety of courses for the undergraduate non-major who is looking for interesting courses to satisfy the general education science requirements (basic and applied or applications) and the population and the environment requirement and/or who has an interest in geological sciences, ecology and environmental sciences, global change, and the environment. Additionally, several introductory level courses are supportive of other undergraduate majors such as Civil and Environmental Engineering, Spatial Information Engineering, Ecology and Environmental Sciences, Science Education, Anthropology, and Plant, Soil and Environmental Sciences. Introductory level courses are: GES 100, GES 101, GES 102, GES 103, GES 104, GES 109, GES 110, GES 121 and GES 140. GES courses at the 1xx level may not be counted as upper level electives for majors in the Geological Sciences. Electives in the major must be GES 2xx or higher.

A BS geology graduate is prepared to enter directly into industry or survey work,

or to enter graduate school in geological sciences. In addition, if BIO 204, CHY 251/252, CHY 253/254 and BIO 100 are taken, the entrance requirements for medical or dental schools are met.

The concentration in Environmental Geology

The requirements for the Bachelor of Science degree include: GES 101 or 102 or 106; GES 314, GES 315, GES 330, GES 333, GES 416, GES 417, GES 456 and one elective geological sciences course above 1XX, MAT 126/127, MAT 232, CHY 121 and 122 (plus laboratory courses CHY 123 and 124), PHY 111/112 or 121/122, and COS 120 or COS 215 or COS 220. An approved summer field course or SIE 271 or FTY 480 is required between the junior and senior years. A concentration in Environmental Geology is possible in both the BA and BS degrees.

Suggested curriculum for B.S. in Geological Sciences

First Year - First Semester
CHY 121 - Introduction to Chemistry 3
CHY 123 - Introduction to Chemistry Laboratory 1
GES 101 - Introduction to Geology 4
or GES 102 - Environmental Geology of Maine 4
Electives 7

First Year - Second Semester
CHY 122 - The Molecular Basis of Chemical Change 3
CHY 124 - The Molecular Basis of Chemical Change Laboratory 1
COS 120 - Introduction to Programming I 3
ENG 101 - College Composition 3
GES 102 - Environmental Geology of Maine 4
Elective 4

Second Year - First Semester
GES 330 - Mineralogy 4
PHY 111 - General Physics I 4
or PHY 121 - Physics for Engineers and Physical Scientists I 4
Elective 7

Second Year - Second Semester
GES 314 - Invertebrate Paleontology 3
MAT 126 - Calculus I 4
Elective 8

Third Year - First Semester
GES 315 - Principles of Sedimentology and Stratigraphy 4
GES 333 - Igneous and Metamorphic Petrology 4
Intermediate Modern Language 4
MAT 127 - Calculus II 4

Third Year - Second Semester
Electives 15

Third Year - Summer
Approved Field Course 6

Fourth Year - First Semester
GES 416 - Introduction to Structural Geology 4

Fourth Year - Second Semester
Electives 14
GES 417 - Introduction to Geophysics 3
Electives 12

The Bachelor of Arts in Geological Sciences

The requirements for the Bachelor of Arts degree include GES 101 or GES 102 or GES 106; GES 314, GES 315, GES 330, GES 331, GES 332, GES 333, GES 416, and GES 456, MAT 126, COS 100 or higher, PHY 111 or PHY 121, CHY 121 (plus laboratory course CHY 123). An approved summer field course is required between the junior and senior year. For students contemplating graduate work in geological sciences, mathematics through MAT 228 and proficiency in French, German, or Russian are recommended. The specimen curriculum is somewhat flexible and may be altered for individuals with previous geological training. Special interdisciplinary programs may be arranged after consultation with the departmental undergraduate advisor. A concentration in Environmental Geology is possible in both the BA and BS degrees.

Suggested curriculum for B.A. in Geological Sciences

First Year - First Semester
CHY 121 - Introduction to Chemistry 3
CHY 123 - Introduction to Chemistry Laboratory 1
GES 101 - Introduction to Geology 4
or GES 102 - Environmental Geology of Maine 4
Electives 7

First Year - Second Semester
COS 101 - Introduction to PC Hardware and Windows 1
COS 102 - Introduction to the World Wide Web 1
COS 103 - Introduction to Spreadsheets 1
ENG 101 - College Composition 3
GES 102 - Environmental Geology of Maine 4
Elective 4

Second Year - First Semester
GES 330 - Mineralogy 4
PHY 111 - General Physics I 4
or PHY 121 - Physics for Engineers and Physical Scientists I 4
Electives 7

Second Year - Second Semester
GES 314 - Invertebrate Paleontology 3
MAT 126 - Calculus I 4
Electives 7

Third Year - First Semester
GES 315 - Principles of Sedimentology and Stratigraphy 4
GES 333 - Igneous and Metamorphic Petrology 4

Third Year - Second Semester
Electives 8

Third Year - Summer
Approved Field Course 6

Fourth Year - First Semester
GES 416 - Introduction to Structural Geology 4

Fourth Year - Second Semester
Electives 14

Landscape Horticulture

The Bachelor of Science in Landscape Horticulvure offers four concentrations; business, design, horticultural therapy and science. The concentrations provide students the opportunity to gain theoretical and practical knowledge in areas such as plant sciences, ornamental plant production and maintenance, landscape design, landscape management, professional practices, business management, horticultural therapy and other related areas. The program provides excellent training for the wide range of opportunities in the horticulture profession and provides a strong background for students interested in pursuing graduate education in areas ranging from landscape architecture to the many areas of plant science. The Landscape Horticulture program also offers an MS degree in Horticulture.

The Landscape Horticulture curriculum offers a challenging academic experience for the serious student; requiring both synthesis and application of learned concepts. Extensive use is made of laboratory and studio activities to illustrate hands-on applications of theoretical principles. Outside the classroom, there are additional opportunities for the student to gain valuable knowledge and experience.

The strong working relationship with state, national and international horticulture

industry members with ties to the Landscape Horticulture Program, has been an important factor contributing to nearly a 100% employment record for our graduates. This Maine program has been ranked one of the best in the Northeast. Our web site is: www.umaine.edu/pse.

Program Requirement:

Courses are arranged in the recommended sequence. Each semester serves as a prerequisite for the following semester. All prerequisites listed for LHC courses must have a grade of C- or higher before any upper level LHC courses can be taken. LHC courses with a grade below a C- will not be counted towards graduation credits.

Suggested curriculum for B.S. in Landscape Horticulture/Business Concentration

First Year - First Semester
CMJ 103 - Fundamentals of Public Communication 3
COS 101 - Introduction to PC Hardware and Windows 1
COS 102 - Introduction to the World Wide Web 1
COS 103 - Introduction to Spreadsheets 1
ENG 101 - College Composition 3
NFA 117 - Issues and Opportunities 1
PSE 100 - Plant Science 4

First Year - Second Semester
INT 110 - (ECO, REP) Modern Economic Problems 3
LHC 110 - Horticultural Science 3
LHC 225 - Landscape Graphic Communication 3
MAT 111 - College Algebra 3
ENG xxx (Literature Course) 3

Second Year - First Semester
BMB 207 - Fundamentals of Chemistry 4
or CHY 121 - Introduction to Chemistry 3
with CHY 123 - Introduction to Chemistry Laboratory 1
LHC 219 - Herbaceous Landscape Plants 3
LHC 221 - Woody Landscape Plants I 3
MAT 115 - Applied Mathematics for Business and Economics 3
PSE 203 - Weed Identification (even years) 2

Second Year - Second Semester
LHC 222 - Woody Landscape Plants II 3
LHC 227 - Landscape Construction 4
PSE 140 - Soil Science 3
PSE 141 - Soil Science Lab 1
REP 254 - Introduction to Production Economics 3

Summer
LHC 396 - Field Experience/Internship in Horticulture 1-16

Third Year - First Semester
BIO 327 - Introductory Applied Entomology 4
BUA 201 - Principles of Financial Accounting I 3
LHC 325 - Turfgrass Management 3
LHC 328 - Landscape Design 4
LHC 370 - Seminar in Landscape Horticulture 2

Third Year - Second Semester
BUA 202 - Principles of Managerial Accounting 3
ENG 317 - Business and Technical Writing 3
LHC 370 - Seminar in Landscape Horticulture 2
LHC 423 - Plant Production 4
PSE 320 - Soil Organic Matter Management (even years) 3
or Free Elective (odd years) 3

Fourth Year - First Semester
LHC 425 - Landscape Management 3
LHC 430 - Environmental Horticulture 3
General Education Requirement: Western Cultural Tradition 3
Free Electives 6

Fourth Year - Second Semester
LHC 428 - Professional Practices in Landscape Horticulture 4
General Education Requirement: Population and the Environment 3
General Education Requirement: Cultural Diversity and International Perspectives 3
Free Elective 3
REP 465 - Food and Fiber Marketing 3

Suggested curriculum for the B.S. in Landscape Horticulture/Design Concentration

First Year - First Semester
CMJ 103 - Fundamentals of Public Communication 3
COS 101 - Introduction to PC Hardware and Windows 1
COS 102 - Introduction to the World Wide Web 1
COS 103 - Introduction to Spreadsheets 1
ENG 101 - College Composition 3
NFA 117 - Issues and Opportunities 1
PSE 100 - Plant Science 4

First Year - Second Semester
INT 110 - (ECO, REP) Modern Economic Problems 3
LHC 110 - Horticultural Science 3
LHC 225 - Landscape Graphic Communication 3
MAT 111 - College Algebra 3
ENG xxx (Literature Course) 3

Second Year - First Semester
BMB 207 - Fundamentals of Chemistry 4
or CHY 121 - Introduction to Chemistry 3
with CHY 123 - Introduction to Chemistry Laboratory 1
LHC 219 - Herbaceous Landscape Plants 3
LHC 221 - Woody Landscape Plants I 3
MAT 121 - Applied Algebra and T rigonometry 3
or MAT 122 - Pre-Calculus 4
PSE 203 - Weed Identification (even years) 2
or Free Elective (odd years) 3

Second Year - Second Semester
LHC 222 - Woody Landscape Plants II 3
LHC 227 - Landscape Construction 4
PSE 140 - Soil Science 3
PSE 141 - Soil Science Lab 1
Free Elective 3

Summer
LHC 396 - Field Experience/Internship in Horticulture 1-16

Third Year - First Semester
BIO 327 - Introductory Applied Entomology 4
LHC 325 - Turfgrass Management 3
LHC 328 - Landscape Design 4
LHC 370 - Seminar in Landscape Horticulture 2
PSE 413 - Wetland Delineation and Mapping (odd years) 4

Third Year - Second Semester
INT 482 - (BSC, PSE) Pesticides and the Environment 3
LHC 370 - Seminar in Landscape Horticulture 2
LHC 423 - Plant Production 4
PSE 320 - Soil Organic Matter Management 3
General Education Requirement: Cultural Diversity and International Perspectives (even years) 3

Fourth Year - First Semester
LHC 425 - Landscape Management 3
LHC 430 - Environmental Horticulture 3
General Education Requirement: Western cultural tradition 3
Free Electives 6

Fourth Year - Second Semester
LHC 428 - Professional Practices in Landscape Horticulture 4
Free Electives 9
General Education Requirement: Population and the Environment 3

Suggested curriculum for the B.S. in Landscape Horticulture/Science Concentration

First Year - First Semester
CMJ 103 - Fundamentals of Public Communication 3

COS 101 - Introduction to PC Hardware and Windows 1
COS 102 - Introduction to the World Wide Web 1
COS 103 - Introduction to Spreadsheets 1
ENG 101 - College Composition 3
NFA 117 - Issues and Opportunities 1
PSE 100 - Plant Science 4

First Year - Second Semester
INT 110 - (ECO, REP) Modern Economic Problems 3
LHC 110 - Horticultural Science 3
MAT 122 - Pre-Calculus 4
Free Elective 3
ENG xxx (Literature Course) 3

Second Year - First Semester
BMB 207 - Fundamentals of Chemistry 4
or CHY 121 - Introduction to Chemistry 3
with CHY 123 - Introduction to Chemistry Laboratory 1
LHC 219 - Herbaceous Landscape Plants 3
LHC 221 - Woody Landscape Plants I 3
PSE 203 - Weed Identification 2
General Education Requirement: Mathematics (even years) 3

Second Year - Second Semester
BMB 208 - Elementary Physiological Chemistry 4
or CHY 122 - The Molecular Basis of Chemical Change 3
with CHY 124 - The Molecular Basis of Chemical Change Laboratory 1
LHC 222 - Woody Landscape Plants II 3
PSE 140 - Soil Science 3
PSE 141 - Soil Science Lab 1
General Education Requirement: Artistic and Creative Expression 3

Summer
LHC 396 - Field Experience/Internship in Horticulture 1-16

Third Year - First Semester
BIO 327 - Introductory Applied Entomology 4
BIO 452 - Plant Physiology 3
BIO 453 - Plant Physiology Laboratory 1
LHC 325 - Turfgrass Management 3
LHC 370 - Seminar in Landscape Horticulture 2
Free Elective 3

Third Year - Second Semester
INT 482 - (BSC, PSE) Pesticides and the Environment 3
LHC 370 - Seminar in Landscape Horticulture 2
LHC 423 - Plant Production 4
PSE 320 - Soil Organic Matter Management (even years) 3
or Free Elective (odd years) 3
Free Elective. 3

Fourth Year - First Semester
LHC 430 - Environmental Horticulture 3
PSE 440 - Soil Chemistry and Plant Nutrition 3
or Free Elective. 3
PSE 457 - Plant Pathology 4
General Education Requirement: Cultural Diversity and International Perspectives 3

Fourth Year - Second Semester
BIO 464 - Taxonomy of Vascular Plants 4
LHC 410 - Plant Propagation 3
General Education Requirement: Population and the Environment 3
General Education Requirement: Western Cultural Tradition 3
General Education Requirement: Writing Competency 3

Suggested curriculum for the BS in Landscape Horticulture/Horticultural Therapy Concentration

First Year - First Semester
CMJ 103 - Fundamentals of Public Communication 3
COS 101 - Introduction to PC Hardware and Windows 1
COS 102 - Introduction to the World Wide Web 1
COS 103 - Introduction to Spreadsheets 1
ENG 101 - College Composition 3
NFA 117 - Issues and Opportunities 1
PSE 100 - Plant Science 4

First Year - Second Semester
LHC 110 - Horticultural Science 3
LHC 225 - Landscape Graphic Communication 3
MAT 111 - College Algebra 3
PSY 100 - General Psychology 3
ENG XXX - (Literature Course) 3

Second Year - First Semester
BMB 207 - Fundamentals of Chemistry 4
LHC 219 - Herbaceous Landscape Plants 3
LHC 221 - Woody Landscape Plants I 3
MAT 121 - Applied Algebra and T rigonometry 3
or MAT 122 - Pre-Calculus 4
PHI 102 - Introduction to Philosophy 3

Second Year - Second Semester
LHC 222 - Woody Landscape Plants II 3
LHC 227 - Landscape Construction 4
PSE 140 - Soil Science 3
PSE 141 - Soil Science Lab 1
SOC 101 - Introduction to Sociology 3

Summer
LHC 396 - Field Experience/Internship in Horticulture 1-16

Third Year - First Semester
BIO 327 - Introductory Applied Entomology 4
LHC 328 - Landscape Design 4
LHC 370 - Seminar in Landscape Horticulture 2
PSY 330 - Social Psychology 3
Free Elective 3

Third Year - Second Semester
INT 482 - (BSC, PSE) Pesticides and the Environment 3
LHC 423 - Plant Production 4
PSY 332 - Environmental Psychology 3
SWK 330 - Contemporary Issues in Diversity and Pluralism 3
SWK 497 - Special Topics in Social Work 1-3

Fourth Year-First Semester
LHC 425-Landscape Management 3
LHC 430-Environmental Horticulture 3
SWK 395-Beginning Field Experience in Social Work 1-3
SWK 497-Special Topics in Social Work 1-3
Free Elective 3

Fourth Year-Second Semester
LHC 428-Professional Practices in Landscape Horticulture 4
SWK 395-Beginning Field Experience in Social Work 1-3
SWK 597-Advanced Topics in Social Work 1-3
General Education Requirement: Population and the Environment 3

Marine Science

Marine science is a rich discipline that combines studies from a variety of subjects in order to understand the marine environment, marine life, and their interactions. Basic knowledge in biology, chemistry, geo-logy, mathematics, and physics is essential for students to analyze the workings of marine systems and to appreciate the processes affecting marine life. Studies in marine biology are broad, spanning organisms from bacteria to whales, and spanning perspectives from entire marine communities to the biochemistry of molecules. Marine science plays a pivotal role in the continuing quest to understand our world and to manage its resources. The interdisciplinary nature of the Marine Science curriculum will prepare students to analyze critically such contemporary issues as environmental change, human impacts on the ocean, and biodiversity.

Students seeking the BS degree in Marine Science follow a biological or a physical marine science track. The biological track

emphasizes ecology, behavior, physiology, genetics, and population and community structure of marine animals, plants, and microbes. The physical track is oriented toward physical, chemical, and geological ocean science. Students in both tracks learn to appreciate the oceanographic perspective, that is, the oceans as systems of interacting components. Both tracks share common courses designed to provide an interdisciplinary science background. Where appropriate, courses take advantage of the many ecological and oceanographic regimes found along the Maine coast. Students in both tracks are encouraged to spend a fall Semester-by-the-Sea taking hands-on courses in residence at the University's Darling Marine Center. Students are counseled to seek opportunities for independent research, internships, and part-time employment with marine faculty. Students in the Marine Science program are provided with a strong general foundation in the sciences suitable for advanced study in one of the marine sciences or in other scientific fields. The BS in Marine Science also provides a solid preparation for immediate employment in marine-related industries, governmental agencies, education, and the nonprofit sector. Students may consult with their academic advisors to achieve specific goals, such as professional certification as an Associate Fisheries Scientist by the American Fisheries Society.

The School of Marine Sciences has administrative offices in Winthrop Libby Hall on the Orono campus. Faculty offices and research laboratories are located on the Orono campus and at the Darling Marine Center. The approximately 40 faculty that comprise the School have expertise in numerous marine fields, and they teach and conduct research and outreach in both basic and applied sciences, such as aquaculture. Most have teaching and research interests of relevance to the State of Maine, e.g. population biology and culture of important marine species, and also of relevance to other geographic areas and scientific questions, e.g. the biology and oceanography of the Antarctic Ocean.

Facilities for teaching and research in marine science on the Orono campus are numerous and diverse. They are found in several buildings that house School faculty. Special instrumentation and facilities include: a scanning and electron microscopy laboratory; instrumentation for molecular biology and microbiology, including a central DNA sequencing facility; aquatic holding and recirculation systems; an oceanographic satellite receiving laboratory; and comprehensive computing support. The Orono campus also houses the Aquaculture Research Center, which contains several salt-water recirculation systems for rearing marine organisms and a wave-generation tank.

The Darling Marine Center is the marine laboratory of the University of Maine and functions as a research and teaching facility for University of Maine students and faculty and for visiting investigators from throughout the world. The Center is located near the mouth of the Damariscotta Estuary about 100 miles south of Orono. A shuttle provides transportation between the Orono and Darling campuses during the academic year. Facilities include modern laboratories, classrooms, conference rooms, a marine library, flowing seawater laboratories a dormitory and dining hall, and cottage housing. A fleet of boats up to 42 feet long provides access to nearby estuarine and coastal waters. Several undergraduate and graduate courses are offered at the Darling Center each year, in addition to the Semester-by-the-Sea program.

Bachelor of Science in Marine Science

Requirements

Students must earn a minimum GPA of 2.0 in all requirements of the major overall and in all SMS courses.

Both tracks:

1. Satisfy university-wide general education requirements
2. Earn at least 120 credits
3. College: NFA 117
4. English: ENG 317
5. Marine Sciences: SMS 100, 302, 402
6. Biology: BIO 100
7. Chemistry: CHY 121, 122, 123, 124
8. Mathematics: MAT 232
9. Resource Economics and Policy: REP 371 or INT 105
10. Senior Capstone Experience: SMS 400

Marine biology track:

1. Marine Ecology: SMS 300 or 306 or 352 or other approved course; Marine Organismal Biology (3 courses): Group 1 (at least 1 course): BIO 353, BMB 300-305; SMS 473, 480, 481; Group 2 (at least 1 course): SMS 322, 422, INT 308, or other approved course
2. Biology: BIO 200
3. Biochemistry, Microbiology, and Molecular Biology: BMB 280
4. Chemistry: CHY 251, 253 or BMB 221, 222
5. Mathematics: MAT 126 or 151
6. Physics: PHY 111, 112 or 121, 122
7. Other: BIO 445 or 452-453 or 462 or 465 or or BMB 430-431 or 490 or SMS 425 or 485 - 486.

Physical marine science track:

1. Marine Sciences: SMS 325, 330
2. Geology: GES 101 or 102 or 109
3. Mathematics: MAT 126, 127
4. Physics: PHY 121, 122
5. Systems and Processes (16 credits from this group): CHY 251-253, 252-254, 371, 372, 374, GES 314, 315, SMS 300 or 352, 410, 460 or other approved course.

Suggested curriculum for the B.S. in Marine Science Marine Biology

First Year - First Semester	
BIO 100 - Basic Biology	4
ENG 101 - College Composition	3
MAT 122 - Pre-Calculus	4
NFA 117 - Issues and Opportunities	1
SMS 100 - Introduction to Ocean Science	3
First Year - Second Semester	
BIO 200 - Biology of Organisms	4
BMB 280 - Introduction to Molecular and Cellular Biology	3
MAT 126 - Calculus I	4
General Education Requirement	3
Second Year - First Semester	
CHY 121 - Introduction to Chemistry	3
CHY 123 - Introduction to Chemistry Laboratory	1
INT 105 - (ECO, REP) Environmental Policy	3
MAT 232 - Principles of Statistical Inference	3
PHY 111 - General Physics I	4
REP 371 - Introduction to Natural Resource Economics and Policy	3
or INT 105 Environmental Policy	3
SMS 300 - Marine Ecology	3
Second Year - Second Semester	
CHY 122 - The Molecular Basis of Chemical Change	3
CHY 124 - The Molecular Basis of Chemical Change Laboratory	1
PHY 112 - General Physics II	4
SMS 322 - Biology of Marine Vertebrates	3
Physiology or Genetics	3
General Education Requirement	3
Third Year - First Semester	
BMB 221 - Organic Chemistry	3
with BMB 222 - Laboratory in Organic Chemistry	1
or CHY 251 - Organic Chemistry I	3
with CHY 253 - Organic Chemistry Laboratory I	2
SMS 302 - Oceanography	3
General Education Requirement	3
Recommended Electives	3-4
Third Year - Second Semester	
ENG 317 - Business and Technical Writing	3
General Education Requirement	3
Marine Science Requirement	5

Fourth Year - First Semester
Semester by the sea (optional) or other fall courses:
SMS 400 - Capstone Experience in Marine Science 2-4
General Education Requirements 6

Fourth Year - Second Semester
SMS 400 - Capstone Experience in Marine Science 2-4
SMS 402 - Advanced Oceanography and Marine Biology 3
Recommended Electives 9

Suggested curriculum for the B.S. in Marine Science Physical Marine Science

First Year - First Semester
BIO 100 - Basic Biology 4
CHY 121 - Introduction to Chemistry 3
CHY 123 - Introduction to Chemistry Laboratory 1
MAT 126 - Calculus I 4
NFA 117 - Issues and Opportunities 1
SMS 100 - Introduction to Ocean Science 3

First Year - Second Semester
CHY 122 - The Molecular Basis of Chemical Change 3
CHY 124 - The Molecular Basis of Chemical Change Laboratory 1
ENG 101 - College Composition 3
GES 101 - Introduction to Geology 4
or GES 102 - Environmental Geology of Maine 4
or GES 109 - Geology of Maine 3
MAT 127 - Calculus II 4

Second Year - First Semester
CHY 242 - Principles of Quantitative Analysis and Solution Equilibria 5
PHY 121 - Physics for Engineers and Physical Scientists I 4
General Education Requirement 3

Second Year - Second Semester
MAT 232 - Principles of Statistical Inference 3
PHY 122 - Physics for Engineers and Physical Scientists II 4
Systems and Processes 3-6

Third Year - First Semester
INT 105 - (ECO, REP) Environmental Policy 3
REP 371 - Introduction to Natural Resource Economics and Policy 3
or INT 105 Environmental Policy 3
SMS 302 - Oceanography 3

Third Year - Second Semester
ENG 317 - Business and Technical Writing 3
SMS 330 - Descriptive Physical Oceanography 3
General Education Requirements 3-6
Systems and processes 3-6

Fourth Year - First Semester
Semester by the sea (optional) or other fall courses:
SMS 400 - Capstone Experience in Marine Science 2-4
General Education Requirements 0-6
Systems and Processes 3-6

Fourth Year - Second Semester
SMS 400 - Capstone Experience in Marine Science 2-4
SMS 402 - Advanced Oceanography and Marine Biology 3
Recommended Electives 3-4
Electives 6-7

Parks, Recreation and Tourism

Outdoor recreation is one of the world's most diverse and fastest -growing industries. It is often intertwined within another worldwide growth industry, tourism.

The Parks, Recreation and Tourism (PRT) program is designed to provide students with training that will qualify them to work in a variety of work settings such as parks and protected natural areas, the public and private business sectors, nonprofit environmental organizations, as well as state and federal natural resource agencies. The PRT program emphasis on the integration of natural, social, and management sciences reflects the interdisciplinary context in which recreation, tourism, natural resource planning, and environmental concerns are addressed.

Students interested in the study of Parks, Recreation and Tourism will find the program ideally situated close to the rocky coasts, mountains, Acadia National Park, Baxter State Park, the Appalachian Trail and Maine tourism developments. Visits to these sites afford students unique and exciting opportunities both during class and leisure to observe and participate in on-going operations relevant to the profession. We frequently have guest lectures from the public sector and commercial recreational enterprises to acquaint students with the diversity of professional management issues and practices.

Our faculty, both full-time and cooperating, are unique in their extensive experience in the field as well as their national and international reputations. A wide array of academic experiences are available to students: field experiences, studies abroad and assisting with recreation-related research enhance our students' education and employability.

Small class sizes ensure student/professor interaction and a more personal learning experience. A faculty advisor works closely with students to assist in choosing a program of study, provide career counseling, and provide a better understanding of the profession.

Students interested in summer intern and cooperative education opportunities can receive academic credit in addition to the valuable on-the-job training experiences. Numerous and diverse intern opportunities exist in the area allowing students to take classes simultaneously if they wish.

The faculty in Parks, Recreation and Tourism bring over 6 decades of experience in recreation resource management and research to the program. The location of the PRT program within the Department of Forest Management provides students with a solid grounding in natural resource management training.

Bachelor of Science In Parks, Recreation and Tourism

The Parks, Recreation and Tourism curriculum is designed to develop proficiency in the profession while providing a broad general education. There are four major study areas within the PRT curriculum:

- Natural Sciences: forest biology, wildlife conservation, ecology, geology, dendrology, conservation biology
- Social Sciences: communications, social psychology, environmental ethics, sociology, environmental history
- Management: ecology and environmental sciences economics, land use planning, forest management, environmental law and policy, business administration, public management
- PRT Professional Preparation: forest recreation management, visitor behavior and management, tourism management and planning, environmental interpretation

Specialization within Parks, Recreation and Tourism

In addition to the base curriculum students may elect courses for a minor in Public relations, Business Administration, International Affairs, Ecology and Environmental Sciences or Psychology and several other related fields.

Suggested curriculum for the B.S. in Parks, Recreation and Tourism

First Year - First Semester
ENG 101 - College Composition 3
FES 100 - Introduction to Forest Biology 4
MAT 122 - Pre-Calculus[1] 4

PRT 225 - Readings in Outdoor Recreation 3
COS XXX, Computer Science Elective 3

First Year - Second Semester
CMJ 103 - Fundamentals of Public Communication 3
GES 101 - Introduction to Geology 4
POS 100 - American Government 3
SOC 101 - Introduction to Sociology 3
Elective 3

Second Year - First Semester
FTY 107 - Forest Vegetation 4
INT 110 - (ECO, REP) Modern Economic Problems 3
PRT 352 - Forest Recreation Management 3
WLE 200 - Ecology 3
Elective 3

Second Year - Second Semester
FTY 349 - Principles of Forest Management 3
PAA 200 - Public Management 3
PRT 355 - Visitor Behavior and Management 3
PSY 100 - General Psychology 3
Elective 3

Third Year - First Semester
CHY 121 - Introduction to Chemistry 3
with CHY 123 - Introduction to Chemistry Laboratory 1
or PHY 105 - Descriptive Physics 4
ENG 317 - Business and Technical Writing 3
PRT 480 - Wilderness and Wild and Scenic River Management 3
PSY 330 - Social Psychology 3
Elective 2

Third Year - Second Semester
FTY 480 - Applied Geographic Information Systems 3
MAT 232 - Principles of Statistical Inference 3
PRT 470 - Principles of Tourism Management and Planning 3
PAA/BUA XXX - Public Administration or Business Administration Elective 3
Elective 3

Fourth Year - First Semester
EES 324 - Environmental Protection Law and Policy 3
PRT 452 - Environmental Interpretation 4
REP 371 - Introduction to Natural Resource Economics and Policy 3
Directed Elective[2] 3
Elective[1] 3

Fourth Year - Second Semester
PRT 491 - Senior Seminar: Issues and Ethics in Parks, Recreation and Tourism 3
REP 474 - Land Use Planning 3
General education requirement credits are to be chosen among the elective credits.
Directed Elective[2] 3
Elective 3

[1]MAT 126 or MAT 151 are strongly recommended for students interested in courses that have a calculus prerequisite or who are considerig graduate studies.

[2]Directed Electivs are WLE 323, HTY 479, or a 400-level 3-credit course from FES, FSC, FTY, PRT, or WSC.

Resource and Agribusiness Management

A degree in Resource and Agribusiness Management positions you for a career in tomorrow's rapidly changing global economy. This degree cultivates the business skills necessary to succeed in sales, marketing or management careers while developing applied tools to operate in small-business, finance, food, forestry or other natural resource-based industries. Students may focus on areas that include resource-based marketing, banking, retail sales, municipal or state government, hotgl/restaurant management or other applied business areas.

In addition to the standard degree, two specialized concentrations are available. The Equine Business Management concentration leads to a Resource and Agribusiness Management degree with specialized training to excel in the equine industry. The second concentration, Agribusiness Administration, leads to the completion of both BS and MBA degrees in five years.

Other opportunities include cooperative field experience, summer internships and study abroad. Some students participate in a unique opportunity to learn about cooperatives, small business credit systems and worldwide financial markets while gaining college credit. Students spend one week working hands-on in a Maine-based cooperative business, they visit the regional Farm Credit Bank in Springfield, Massachusetts to learn about bank administration and they visit Wall Street banking firms and financial institutions for four days to learn about national financial markets. Some students are also employed in departmental research projects.

Other programs offered by the Department of Resource Economics and Policy include an Environmental Management and Policy degree with six concentrations: Adventure Recreation Business Management, Adventure Recreation Management, Environment Leadership and Communication, Environmental Pre-Law, Policy Development and Analysis, and Quantitative Analysis. The department's faculty also cooperate in the Ecology and Environmental Sciences degree.

Out-of-state students residing in Connecticut, Massachusetts, Rhode Island and Vermont enrolled in the Resource and Agribusiness Management degree pay reduced tuition (in-state plus 50%) rather than full out-of-state tuition rates under the New England Regional Student Program.

Suggested Sequence of Courses B.S. in Resource and Agribusiness Management

First Year - First Semester
COS 100 - Introduction to the Personal Computer and the Internet 3
ECO 120 - Principles of Microeconomics 3
ENG 101 - College Composition 3
NFA 117 - Issues and Opportunities 1
Humanities or Social Sciences Elective 3

First Year - Second Semester
CMJ 103 - Fundamentals of Public Communication 3
ECO 121 - Principles of Macroeconomics 3
MAT 115 - Applied Mathematics for Business and Economics 3
REP 286 - Resource Policy Analysis 3
Humanities or Social Sciences Elective 3

Second Year - First Semester
BUA 201 - Principles of Financial Accounting I 3
MAT 114 - Calculus for Business and Economics 3
REP 371 - Introduction to Natural Resource Economics and Policy 3
Free Elective 3

Second Year - Second Semester
BUA 202 - Principles of Managerial Accounting 3
ECO 420 - Intermediate Microeconomics 3
MAT 215 - Introduction to Statistics for Business and Economics 3
REP 254 - Introduction to Production Economics 3
Humanities or Social Sciences Elective 3
Professional Elective 3

Third Year - First Semester
REP 458 - Principles of Resource Business Management 3
Basic Science Elective 4
Humanities or Social Sciences Elective 3
Professional Electives 6

hird Year - Second Semester
NG 317 - Business and Technical Writing 3
EP 465 - Food and Fiber Marketing 3
EP 468 - Quantitative Analysis and Forecasting 3
rofessional Elective 3
lumanities or Social Sciences Elective 3

ourth Year - First Semester
CO 421 - Intermediate Macro-economics 3
EP 459 - Resource Based Business Finance 3
rofessional Elective 3
asic Science Elective 4
lumanities or Social Sciences Elective 3

ourth Year - Second Semester
EP 489 - Senior Seminar 3
rofessional Electives 6
ree Electives 7

Resource and Agribusiness Management (Agribusiness Administration)

The Agribusiness Administration concentration under the Resource and Agribusiness Management degree is a 5-year program providing a unique opportunity to earn both a Bachelors of Science degree in Resource and Agribusiness Management and a Master's of Business Administration (MBA). The program is offered jointly by the Department of Resource Economics and Policy and the College of Business, Public Policy and Health. The program is academically challenging and recommended only for the most capable students. The Agribusiness Administration majors complete the same basic requirements as Resource and Agribusiness Management majors but take five additional business courses in place of electives (as shown below). Continuance in the concentration requires a minimum cumulative GPA of 2.5.

Students who successfully complete the 4-year undergraduate portion of the program will receive the BS in Resource and Agribusiness Management, and will be eligible to apply for Graduate School in the MBA Program. Completion of the undergraduate concentration does not guarantee admission to the MBA program. Admission requirements for the MBA include a good undergraduate grade point average, plus a minimum score of 475 on the Graduate Management Admission Test (GMAT). The following formula can be used as a guide to determine eligibility:

(Undergraduate GPA) x 200 + GMAT score = 1075 or more.

Out-of-state students residing in Connecticut, Massachusetts, Rhode Island and Vermont enrolled in the Resource and Agribusiness Management degree pay reduced tuition (in-state plus 50%) rather than full out-of-state tuition rates under the New England Regional Student Program.

Suggested curriculum for the B.S. in Resource and Agribusiness Management—Agribusiness Administration.

First Year - First Semester
COS 211 - Principles of Data Processing 3
ECO 120 - Principles of Microeconomics 3
ENG 101 - College Composition 3
NFA 117 - Issues and Opportunities 1
Human Values and Social Context Elective 3

First Year - Second Semester
CMJ 103 - Fundamentals of Public Communication 3
ECO 121 - Principles of Macro-economics 3
MAT 115 - Applied Mathematics for Business and Economics 3
REP 286 - Resource Policy Analysis 3
Humanities or Social Sciences Elective 3

Second Year - First Semester
BUA 201 - Principles of Financial Accounting I 3
BUA 220 - The Legal Environment of Business 3
MAT 114 - Calculus for Business and Economics 3
Humanities or Social Sciences Elective 3
Free Elective 3

Second Year - Second Semester
BUA 202 - Principles of Managerial Accounting 3
ECO 420 - Intermediate Micro-economics 3
MAT 215 - Introduction to Statistics for Business and Economics 3
REP 254 - Introduction to Production Economics 3
Basic Science Elective 4

Third Year - First Semester
BUA 350 - Business Finance 3
REP 371 - Introduction to Natural Resource Economics and Policy 3
REP 458 - Principles of Resource Business Management 3
Free Elective 3
Humanities or Social Sciences Elective 3

Third Year - Second Semester
BUA 325 - Principles of Management and Organization 3
ENG 317 - Business and Technical Writing 3
REP 465 - Food and Fiber Marketing 3
REP 468 - Quantitative Analysis and Forecasting 3
Humanities or Social Sciences Elective 3

Fourth Year - First Semester
BUA 370 - Marketing 3
ECO 421 - Intermediate Macro-economics 3
REP 459 - Resource Based Business Finance 3
Professional Elective 3
Basic Science Elective 4

Fourth Year - Second Semester
BUA 335 - Principles of Management Information Systems 3
REP 489 - Senior Seminar 3
Humanities or Social Sciences Elective 3
Professional Elective 3
Free Elective 3

Resource and Agribusiness Management (Equine Business Management)

The Equine Business Management concentration is designed for students who are interested in management careers in the equine industry. This curriculum provides a solid business management background that prepares students for a management career in any industry, but provides significant training that is geared to the equine industry. All students in this concentration participate in at least one internship relevant to their career goals.

The University's 30 box stall Cooperative Horse Barn enables students to board their horses at low cost. We have a full-sized outdoor riding arena and miles of riding trails through open fields and woods of Maine. A full-sized indoor arena with additional box stalls is planned for the near future. The University also owns and trains two racehorses. Equine-related activities for students include an equestrian team, a dressage team, a drill team, the Maine Animal Club and others.

Students may participate in an international exchange program, and Study Abroad for a semester or a year. Resource Economics and Policy students have recently studied in Ireland and Australia. Many opportunities exist for students to participate in internships or cooperative experience with business and government organizations.

Suggested curriculum for the B.S. in Resource and Agribusiness Management—Equine Business Management.

First Year - First Semester
BIO 100 - Basic Biology 4
ENG 101 - College Composition 3
NFA 117 - Issues and Opportunities 1
Equine or Free Elective 3
Human Values and Social Context Elective 3

First Year - Second Semester
CMJ 103 - Fundamentals of Public Communication 3
ECO 120 - Principles of Micro-economics 3
MAT 115 - Applied Mathematics for Business and Economics 3
Equine or Free Elective 3

Second Year - First Semester
AVS 203 - Equine Management 3
BUA 201 - Principles of Financial Accounting I 3
MAT 114 - Calculus for Business and Economics 3
Equine or Free Elective 3

Second Year - Second Semester
BUA 202 - Principles of Managerial Accounting 3
ECO 420 - Intermediate Micro-economics 3
REP 254 - Introduction to Production Economics 3
REP 286 - Resource Policy Analysis 3
Equine or Free Elective 3

Third Year - First Semester
AVS 150 - History of the Human-Animal Relationship 3
MAT 215 - Introduction to Statistics for Business and Economics 3
REP 458 - Principles of Resource Business Management 3
Equine or Free Elective 3

Third Year - Second Semester
AVS 353 - Equine Reproduction and Breeding Management 3
ENG 317 - Business and Technical Writing 3
REP 465 - Food and Fiber Marketing 3
Equine or Free Elective 3
Human Values and Social Contexts Elective 3

Fourth Year - First Semester
AVS 397 - Equine Internship 4
REP 459 - Resource Based Business Finance 3
Equine or Free Elective 3
Human Values and Social Contexts Elective 3

Fourth Year - Second Semester
REP 468 - Quantitative Analysis and Forecasting 3
REP 489 - Senior Seminar 3
Equine or Free Elective 3
Human Values and Social Contexts Elective 3
Free Elective 3

Sustainable Agriculture

The Bachelor of Science in Sustainable Agriculture is an interdisciplinary program offered cooperatively by the faculties of the Departments of Plant, Soil and Environmental Sciences; Biological Sciences; and Resource Economics and Policy. The program is designed for students interested in working in the growing field of ecologically based agriculture in areas of information dissemination, research or production within the public and private sectors; as policy analysts; or as farmers with sound training in natural resource management and economics. The BS degree in Sustainable Agriculture can also be used as preparation for postgraduate study in a variety of disciplines.

The Sustainable Agriculture program stresses how to build soil tilth and fertility through rotations, multiple cropping and nutrient recycling; how to protect water quality and human health by decreasing the need to use synthetic agrochemical; how to manage crop pests and livestock diseases with integrated, ecologically sound strategies; how to create a strong, diversified agriculture that is stable through market and weather fluctuations; how to increase farm profits by decreasing the costs of crop and livestock production. Our web site is: www.umaine.edu/pse.

Black Bear Food Guild:

The Guild, a community-supported agricultural endeavor, was initiated and developed by students in response to need for more hands-on learning. Students manage approximately 3 acres of organic vegetables, herbs and cover crops. The majority of the operating capital is from the sale of membership shares to community members as well as from participation in local farmers markets.

Recommended curriculum for the BS in Sustainable Agriculture

First Year - First Semester
AVS 145 - Animal Science 4
BIO 100 - Basic Biology 4
NFA 117 - Issues and Opportunities 1
PSE 100 - Plant Science 4
PSE 105 - Principles of Sustainable Agriculture 3

First Year - Second Semester
CMJ 103 - Fundamentals of Public Communication 3
ENG 101 - College Composition 3
MAT 121 - Applied Algebra and Trigonometry 3
or MAT 122 - Pre-Calculus 4
PSE 101 - Cropping Systems (odd years) 4

Second Year - First Semester
BIO 319 - General Ecology 3
or WLE 200 - Ecology. 3
BMB 207 - Fundamentals of Chemistry 4
or CHY 121 - Introduction to Chemistry 3
with CHY 123 - Introduction to Chemistry Laboratory 1
ENG XXX - 3
MAT 232 - Principles of Statistical Inference 3
PSE 203 - Weed Identification (even years) 2
or Free Elective. 3

Second Year - Second Semester
BMB 208 - Elementary Physiological Chemistry 4
or CHY 122 - The Molecular Basis of Chemical Change 3
with CHY 124 - The Molecular Basis of Chemical Change Laboratory 1
PSE 140 - Soil Science 3
PSE 141 - Soil Science Lab 1
REP 254 - Introduction to Production Economics 3
General Education: Western Cultural Tradition. 3

Summer
PSE 396 - Field Experience in Plant, Soil and Environmental Sciences 1-16

Third Year - First Semester
BIO 327 - Introductory Applied Entomology 4
BIO 448 - Insect Pest Ecology and Management (even years) 3
or PSE 403 - Weed Ecology and Management (odd years) 3
BIO 452 - Plant Physiology 3
BIO 453 - Plant Physiology Laboratory 1
PSE 457 - Plant Pathology 4

Third Year - Second Semester
PSE 320 - Soil Organic Matter Management (even years) 3
or PSE 469 - Soil Microbiology 4
PSE 479 - Crop Ecology and Physiology (even years) 3
REP 381 - Sustainable Development Principles and Policy 3
Free Elective 3
General Education: Cultural Diversity and International Perspectives 3

Fourth Year - First Semester
BIO 448 - Insect Pest Ecology and Management (even years) 3
or PSE 403 - Weed Ecology and Management (odd years) 3
PSE 440 - Soil Chemistry and Plant Nutrition 3
Electives 6
General Education: Social Contexts 3

ourth Year - Second Semester
NT 450 - (PSE, REP) Design and Management of Agroecosystems 3
NT 482 - (BSC, PSE) Pesticides and the Environment 3
lectives. 6
eneral Education: Artistic and Creative Expression 3

Wildlife Ecology

The Wildlife Ecology Department offers n education with an emphasis on basic ciences and principles of wildlife ecology nd resource management, with the goal for udents to develop responsible citizenship nd a sound training as a professional ildlife biologist. Students are exposed to ildlife issues in a diversity of ecological ystems on lands in national parks, wildlife fuges, state management areas, and rivately owned land. Maine offers diverse pportunities to study wildlife in a variety of atural environments ranging from the coast vith its sea birds, marine mammals and agles, to the more mountainous northern oreal forest occupied by moose, loons, red-acked salamanders and marten.

A very active Wildlife Ecology graduate rogram, offering both M. S. and Ph.D. legrees, enables undergraduates to interact vith graduate students researching questions n Wildlife Ecology. Students have the pportunity to work with the Biological Resources Division, USGS, the U.S. Fish and Wildlife Service, through the Maine Cooperative Fish and Wildlife Research Unit.

The curriculum in Wildlife Ecology is lesigned to train the student to adapt to the hanging requirements of the Wildlife rofession. In addition to meeting the ertification requirements of The Wildlife ociety, the curriculum offers a solid base of rts, humanities, and social sciences. In ddition, students can also meet the ducation requirements for federal and state ositions in wildlife.

Requirements for Admission to Wildlife Ecology Program:

In addition to the general requirements of he University and those of the College of Natural Sciences, Forestry, and Agriculture, dmission to the BS in Wildlife Ecology from igh school requires 4 units of English, 3 nits of math (including math in the senior ear), and at least 2 units of lab science. In ddition, the student must be in the top 25% f their high school class or have SAT verbal + math scores = 1100+. For transfer students, 2.5 GPA and completion of English Composition, Biology of Organisms, and Pre-calculus are required for admission.

Requirements for BS in Wildlife Ecology
125 credits including:

1. Satisfy general education requirements.
2. Complete all courses listed in the suggested curriculum.
3. One additional field course.
4. One additional communication course (not CMJ 102).
5. Fifteen credits in a concentration or minor with courses to be selected in consultation with your advisor. Available concentrations are:
   - Animal Science
   - Communication
   - Conservation Biology
   - Education
   - Fisheries
   - Forestry
   - International Conservation
   - Mathematics, Statistics and Computer Science
   - Pre-Veterinary
   - Remote Sensing and Spatial Analysis
   - Resource Management
   - Science
6. Field experience in the profession, either through a paid or volunteer position.
7. Complete 125 credits.

Suggested curriculum for the BS in Wildlife Ecology

First Year - First Semester
BIO 100 - Basic Biology 4
ENG 101 - College Composition 3
MAT 122 - Pre-Calculus 4
or MAT 151 - Calculus for the Life Sciences 4
WLE 100 - Introduction to Wildlife Resources 1
Elective[1] 3

First Year - Second Semester
BIO 200 - Biology of Organisms 4
CMJ 103 - Fundamentals of Public Communication 3
COS 1XX - Computer Course 3
WLE 150 - Wildlife Field Trip 1
WLE 230 - Introduction to Wildlife Conservation 3
Elective[1] 2

Second Year - First Semester
BIO 326 - General Entomology 4
or BIO 353 - Invertebrate Zoology 4
BMB 207 - Fundamentals of Chemistry 4
or CHY 121 - Introduction to Chemistry 3
with CHY 123 - Introduction to Chemistry Laboratory 1
MAT 232 - Principles of Statistical Inference 3
WLE 200 - Ecology 3
WLE 201 - Ecology Laboratory 2

Second Year - Second Semester
BMB 208 - Elementary Physiological Chemistry 4
or INT 110 - (ECO, REP) Modern Economic Problems 3
WLE 220 - Introduction to Statistical Ecology 4
Elective[1] 4

May Term
WLE 250 - Wildlife Field Survey 2

Third Year - First Semester
BIO 329 - Vertebrate Biology 3
BIO 331 - Vertebrate Biology Laboratory 1
ENG 317 - Business and Technical Writing 3
WLE 410 - Wildlife Population Dynamics and Conservation 3
Electives[1] 4

Third Year - Second Semester
BIO 464 - Taxonomy of Vascular Plants 4
FTY 349 - Principles of Forest Management[2] 3
WLE 450 - Wildlife-Habitat Relationships 4
WLE 455 - Wildlife-Habitat Evaluation 2
Electives[1] 4

Fourth Year - First Semester
BIO 472 - Fishery Biology 3
REP 371 - Introduction to Natural Resource Economics and Policy 3
Electives[1] 9

Fourth Year - Second Semester
PSE 140 - Soil Science 3
PSE 141 - Soil Science Lab 1
WLE 323 - Introduction to Conservation Biology 3
WLE 470 - Wildlife Policy and Administration 3
Electives[1] 5

[1]Electives must be chosen to meet remaining General Education Requirements (Western Cultural Tradition, Cultural Diversity Artistic Expression, and Ethics); to fill 15-credit requirement for a concentration, a required second communications course (not CMJ 102), and a required second field course.

[2]Students in forestry and Resource Management Concentrations have substitutes for FTY 349.

Wood Science and Technology

Wood Science and technology is a professional, accredited program with an emphasis on a career in the Forest Products industry. As greater demands are made on the world's forest resources by a growing and consuming population, the development of new technology is essential to meet these demands in an environmentally acceptable and sustainable manner. Wood scientists and forest products technologists are vital links to meeting consumer and environmental demands on our forests. The wood science curriculum prepares students for a dynamic career in the forest products industry by immersing students in a comprehensive study of wood material science fundamentals (anatomy, chemistry, mechanics and physics), and primary and secondary wood products manufacturing processes. Many of the wood science courses have laboratory components to reinforce lecture material and as such typically attract students with an interest in hands-on learning and careers. Well-equipped laboratories and numerous field trips to industrial facilities ensure exposure to modern and relevant industrial practices. A capstone course allows students to apply learned wood science principles to case studies of wood product manufacturing problem solving. The curriculum also exposes the students to a sound grounding in the sciences, including mathematics, chemistry, and physics. The combination of theory and practice is intended to develop good problem solving and communication skills which are essential for career advancement. The forest products industry is one of the largest industries in the US, with 1.4 million employees nationwide. Currently there are fewer than 300 graduates annually with training in forest products in the whole country. As such there is great demand for wood science graduates and numerous career opportunities in this field of study.

The curriculum is designed to be flexible and allows students to complement their training with electives in specific areas of interest. Many students with an interest in management successfully combine their program with business courses. A strong graduate research program (MS and Ph.D.) results in many opportunities for undergraduates to become involved in research and development projects associated with the New England Wood Utilization Research Program and the Advanced Engineered Wood Composites Center.

An off-campus-training phase of this program provides summer employment experience in the field of forest products, including a comprehensive report.

Suggested curriculum for the BS in Wood Science and Technology

First Year - First Semester

CHY 121 - Introduction to Chemistry	3
CHY 123 - Introduction to Chemistry Laboratory	1
FES 100 - Introduction to Forest Biology	4
FTY 101 - Introduction to Forest Resources	1
MAT 126 - Calculus I	4
or MAT 151 - Calculus for the Life Sciences	4

First Year - Second Semester

CMJ 103 - Fundamentals of Public Communication	3
ENG 101 - College Composition	3
FTY 104 - Statistical Inference for Forest Management	3
or MAT 232 - Principles of Statistical Inference	3
FTY 105 - Introduction to Forest Measurements	3
MAT 232 - Principles of Statistical Inference	3
General Education Requirement	3

Second Year - First Semester

BMB 221 - Organic Chemistry	3
FTY 107 - Forest Vegetation	4
PHY 107 - Technical Physics I	4
or PHY 111 - General Physics I	4
WSC 212 - Introduction to Wood Science and Technology	3
WSC 213 - Hand Lens Identification of Wood Laboratory	1

Second Year - Second Semester

INT 110 - (ECO, REP) Modern Economic Problems	3
WSC 416 - Functional Structure of Woody Plants	3
Professional Electve	6
General Education Requirement	3

Third Year - First Semester

FSC 401 - Timber Harvesting	3
WSC 314 - Wood and Wood-Fiber Processing	4
Professional Elective	6
General Education Requirement	3

Third Year - Second Semester

CHY 483 - Introductory Wood Chemistry	3
or PPA 465 - Pulp Technology	3
ENG XXX - Writing Elective	3
WSC 319 - Wood Deterioration and Protection	3
WSC 425 - Mechanical Properties of Wood	3
General Education Elective	3

Summer Session

WSC 396 - Field Experience	Ar

Fourth Year - First Semester

WSC 318 - Wood and the Environment	3
WSC 440 - Adhesion and Adhesives Technology	4
General Education Elective.	3
Professional Elective	4

Fourth Year - Second Semester

BUA 201 - Principles of Financial Accounting I	3
or FTY 540 - Forest Products Marketing	3
FTY 444 - Forest Resources Economics	3
WSC 430 - Wood Composites and Adhesion	3
WSC 450 - Wood Structural Applications	3
Professional Elective	3

Natural Sciences, Forestry, and Agriculture Minors

The specific requirements for each approved minor in the College of Natural Sciences, Forestry, and Agriculture are detailed below. Free electives are normally used to satisfy minor requirements and it normally will not involve additional credits to those required for completion of the major

If you decide to work towards a minor program in addition to the major, you need to officially declare your intention with the department or school where the minor is offered. If this is not done, there is no guarantee that proper certification of the minor will appear on the transcript. If you begin work on a minor but fail to meet all of the requirements, there is no penalty; no reference to the minor will appear on the transcript.

Animal and Veterinary Sciences: (18-21 credits)

Prior to enrolling in the minor, students must consult with the chairperson of the Department of Animal and Veterinary Sciences to select the courses most appropriate to their background and career goals, and to request appropriate course substitutions, if necessary.

AVS 145 - Animal Science	4
AVS 466 - Feeding Dairy Cattle.	2
The student selects two courses from the following (5 to 8 credits)	
AVS 249 - Laboratory and Companion Animal Science	2
AVS 346 - Dairy Cattle Technology	5

VS 349 - Livestock Management 3
VS 351 - Animal Science Techniques 3

he student selects at least two additional courses from the following to make a total of at least 18 credits:
VS 437 - Animal Diseases 3
VS 455 - Animal Nutrition 4
VS 461 - Animal Breeding 3
VS 480 - Physiology of Reproduction 3

quaculture: (18 credits)

The minor in aquaculture is designed for udents in the College of Natural Sciences, orestry and Agriculture who wish to apply e knowledge and skills developed through eir major programs to the field of quaculture, i.e. the science and business of roducing aquatic animals and plants useful humans. The minor consists of a common ore plus electives from a recommended roup:
ore
MS 211 - Introduction to Aquaculture 3
MS 401 - Critical Issues in Aquaculture 1
MS 409 - Shellfish Aquaculture 3
MS 420 - Fish Aquaculture I 3
lus at least 7 credits from the following:
FSN 440 - Utilization of Aquatic Food Resources 3
INT 460 - (BSC, CHB, CIE, SMS) Environmental Aspects of Aquaculture 3
SMS 220 - Introduction to Marine Resources 2
SMS 309 - Techniques in Shellfish Aquaculture 2
SMS 422 - Biology of Fishes 3
SMS 449 - Engineering in Aquaculture 3
SMS 467 - Fish Nutrition and Feeding 3

Biochemistry: (18 credits)

BMB 322 - Biochemistry 3
BMB 323 - Introductory Biochemistry Laboratory 1
BMB 460 - Advanced Biochemistry 3

Upper level courses offered by the department and required for the major (11 cr.)

Biology: (18 credits)

BIO 100 - Basic Biology 4
BIO 200 - Biology of Organisms 4
BIO 319 - General Ecology 3
or SMS 300 - Marine Ecology. 3
or WLE 200 - Ecology. 3
BMB 280 - Introduction to Molecular and Cellular Biology 3
any courses from Biological Sciences Areas III - V in Biology B.A. and B.S. programs. 4

Botany: (18 credits)

The minor in Botany is designed for non-majors who would like to develop a basic understanding of the structure, function, and diversity of plants. The requirements for the minor in Botany include the following:
BIO 100 - Basic Biology 4
BIO 200 - Biology of Organisms 4
Three courses, at least two of which must be plant courses (P) from Biological Sciences Areas III-V in Botany B.A. and B.S. programs (10 cr.)

Ecology and Environmental Sciences: (20 credits)

EES 100 - Human Population and the Global Environment 3
EES 489 - Critical Issues in Ecology and Environmental Sciences Policy 3
BIO 205 - Field Natural History of Maine 4
or BIO 475 - Field Marine Ecology. 4
BIO 319 - General Ecology. 3
or WLE 200 - Ecology. 3
PSE 140 - Soil Science 3
with PSE 141 - Soil Science Lab 1
or GES 101 - Introduction to Geology. 4
REP 371 - Introduction to Natural Resource Economics and Policy 3
or EES 324 - Environmental Protection Law and Policy. 3
or REP 330 - Waste Management. 3
or REP 381 - Sustainable Development Principles and Policy. 3
One of the following:
EES 324 - Environmental Protection Law and Policy 3
REP 330 - Waste Management 3
REP 371 - Introduction to Natural Resource Economics and Policy 3
REP 381 - Sustainable Development Principles and Policy 3

Environmental Management and Policy: (18 credits)

The minor in Enviromental Management and Policy is intended for students who would like to complement their major with a deeper understanding of enviromental management and policy issues. The minor is also intended to provide students broader career opportunities than their current major may provide.

EES 324 - Environmental Protection Law and Policy 3
EES 424 - Environmental Assessment and Management Techniques 3
REP 330 - Waste Management 3
REP 371 - Introduction to Natural Resource Economics and Policy 3
REP 381 - Sustainable Development Principles and Policy 3
REP 474 - Land Use Planning 3

Equine Studies: (18 credits)

The minor in Equine Studies is intended for students from various backgrounds who wish to adapt their education to horses. Prior to enrolling in the minor, students must consult with the chairperson of the Department of Animal and Veterinary Sciences to select courses most appropriate to their background and career goals, and to arrange any course substitutions which may be appropriate.

AVS 203 - Equine Management 3
Group A - Equine classes
AVS 303 - Equine Management Cooperative 4
AVS 353 - Equine Reproduction and Breeding Management 3
At least 8 credits from the following classes but no more than one class from Group B.
AVS 243 - Centered Riding Principles of Equitation 3
AVS 253 - Principles of Western Riding 3
AVS 343 - Draft Horses in Sustainable Forestry and Agriculture 2
AVS 353 - Equine Reproduction and Breeding Management 3
AVS 393 - Training the Standardbred Horse 3
AVS 397 - Equine Internship 4
AVS 433 - Equine Exercise Physiology 3
AVS 150 - History of the Human-Animal Relationship. 3
AVS 151 - History of Veterinary Medicine 3
AVS 368 - Independent Study var

Group B - Non-Equine classes relevant to Equine Studies
AVS 437 - Animal Diseases 3
AVS 455 - Animal Nutrition 4
AVS 480 - Physiology of Reproduction 3
BIO 377 - Animal Physiology 3
BMB 322 - Biochemistry 3
BMB 420 - Pathogenic Microbiology and Serology 3
BMB 440 - Introductory Immunology 3
BUA 201 - Principles of Financial Accounting I 3
EDB 202 - Schools, Students, and Society 3
EES 100 - Human Population and the Global Environment 3
KPE 378 - Physiology of Exercise 3
PSE 101 - Cropping Systems 4
PSE 105 - Principles of Sustainable Agriculture 3
REP 254 - Introduction to Production Economics 3

Fisheries: (21 credits)

The fisheries minor is designed for students in the College of Natural Sciences, Forestry and Agriculture who would like an

emphasis in fisheries or students in other programs who have an interest in fisheries or natural resource management. The minor is designed to partially fulfill certification requirements of the American Fisheries Society for fishery biologists. Current certification requirements can be found at www.fisheries.org

Requirements:
WLE 200 - Ecology 3
or BIO 319 - General Ecology. 3
or SMS 300 - Marine Ecology. 3
WLE 410 - Wildlife Population Dynamics and Conservation 3
BIO 472 or SMS 321 is required plus one additional course from the following list:
BIO 472 - Fishery Biology 3
SMS 211 - Introduction to Aquaculture 3
SMS 321 - Introduction to Fisheries Science 3
SMS 422 - Biology of Fishes 3
One of the following courses:
BIO 463 - River Ecology 4
BIO 468 - Limnology 3
SMS 302 - Oceanography 3
One of the following courses:
MAT 232 - Principles of Statistical Inference 3
WLE 220 - Introduction to Statistical Ecology 4
One of the following courses:
REP 371 - Introduction to Natural Resource Economics and Policy 3
WLE 470 - Wildlife Policy and Administration 3

Minimum course prerequisites for the fisheries minor are BIO 100, BIO 200, MAT 111 and INT 110 or ECO 120. Some combinations of courses in the minor also will require CHY 121/123, CHY 122/124, PHY 112 and SMS 100 as prerequisites.

Food Science: (18 credits)

The courses that make up the minor in Food Science are to be selected from the following list following consultation with a member of the food science faculty. This minor may be of interest to science or business majors who wish to seek employment in the food industry or with government agencies associated with food.

Also, not more than 6 credits of FSN 397 - Independent Studies and not more than 6 credits of FSN 396 - Field Experience in Food Science and Human Nutrition may be counted towards the 18-credit total.
FSN 330 - Introduction to Food Science 3

The additional 15 credits may include:
FSN 238 - Applied Food Microbiology and Sanitation 3
FSN 340 - Food Processing Laboratory 1
FSN 436 - Food Law 3
FSN 438 - Food Microbiology 4
FSN 440 - Utilization of Aquatic Food Resources 3
FSN 450 - Food Biotechnology 2
FSN 482 - Food Chemistry 3
FSN 483 - Food Chemistry Laboratory 1
FSN 502 - Food Preservation 3
FSN 520 - Food Product Development 3
FSN 585 - Sensory Evaluation of Foods 3
FSN 587 - Food Analysis 3
INT 482 - (BSC, PSE) Pesticides and the Environment 3
REP 465 - Food and Fiber Marketing 3

Forest Ecosystem Science: (19 credits)

Students minoring in Forest Ecosystems Science must be ssigned an adisor from the FES faculty.
Core Requirements:
BIO 100 - Basic Biology 4
or BIO 222 - Biology: The Living Science 4
or FES 100 - Introduction to Forest Biology 4
FTY 107 - Forest Vegetation 4
Additional Courses:
To complete the minor, select courses from the following list with no more than one of the classes being required for the major: At least 11 credits are needed.

FES 407 - Forest Ecology 3
FES 408 - Silviculture 3
FES 409 - Forest Ecology and Silviculture Field Laboratory 2
FES 416 - Functional Structure of Woody Plants 3
FES 435 - Managing Forest Succession 3
FTY 410 - Artificial Regeneration 3
FTY 415 - Forest Genetics 3
INT 256 - (BSC, FES) Tree Pests and Disease 4

Forest Products: (18-22 credits)

Students minoring in Forest Products must be assigned an academic advisor from the faculty of Wood Science and Technology in the Department of Forest Management and must obtain that advisors signature when registering for WSC courses.
The Forest Products minor must complete the following courses:
WSC 212 - Introduction to Wood Science and Technology[1] 3
WSC 213 - Hand Lens Identification of Wood Laboratory[1] 1
WSC 314 - Wood and Wood-Fiber Processing[1] 4
WSC 318 - Wood and the Environment 3
WSC 319 - Wood Deterioration and Protection 3
WSC 425 - Mechanical Properties of Wood 3
Plus a minimum of 5 credits from the following courses:
FTY 540 - Forest Products Marketing 3
WSC 345 - Special Problems Ar
WSC 416 - Functional Structure of Woody Plants 3
WSC 430 - Wood Composites and Adhesion 3
WSC 440 - Adhesion and Adhesives Technology 4
WSC 450 - Wood Structural Applications 3

[1]Forestry majors already choose between WSC 212/213 and WSC 314, so the total requirement of this minor for Forestry majors is 18 credits. For others it is 22.

Forest Recreation Management: (18 credits)

Students minoring in Forest Recreation Management must be assigned an advisor from the Faculty of Parks, Recreation and Tourism in the Department of Forest Management and must obtain the advisor's signature when registering for PRT courses.

PRT 225 - Readings in Outdoor Recreation 3
PRT 352 - Forest Recreation Management 3
PRT 355 - Visitor Behavior and Management 3
PRT 452 - Environmental Interpretation 4
PRT 470 - Principles of Tourism Management and Planning 3
One of the following:
EES 324 - Environmental Protection Law and Policy 3
FTY 446 - Forest Resources Policy 3
HTY 479 - U.S. Environmental History 3
PHI 232 - Environmental Ethics 3
PRT 480 - Wilderness and Wild and Scenic River Management 3
PRT 491 - Senior Seminar: Issues and Ethics in Parks, Recreation and Tourism 3

Geological Sciences: (18 or more credits)

A minor in Geological Sciences consists of minimum of 18 credits of courses in the department, no more than 8 of which are at the 1xx level. No grade below a C- will be accepted toward these requirements.

At least one but not more than two of the following 1XX-level courses (3-6 cr.) and at least three of the remaining 3XX-level and 4XX-level courses (12-15 cr.)

ES 101 - Introduction to Geology 4
ES 102 - Environmental Geology of Maine 4
ES 104 - Dinosaurs 3
ES 109 - Geology of Maine 3
ES 110 - Coastal Geology of New England and the Canadian Maritimes 3
ES 121 - Humans and Global Change 3
ES 314 - Invertebrate Paleontology 3
ES 315 - Principles of Sedimentology and Stratigraphy 4
ES 324 - Geology of North America 3
ES 325 - Ore Deposits-Origin and Exploration 4
ES 330 - Mineralogy 4
ES 333 - Igneous and Metamorphic Petrology 4
ES 416 - Introduction to Structural Geology 4
ES 417 - Introduction to Geophysics 3
ES 441 - Principles of Glacial Geology 3

uman Nutrition: (18 credits)

The courses, which make up the minor in uman Nutrition, are to be selected from the llowing approved list in consultation with a ember of the Human Nutrition faculty. ourses will be chosen to complement each udent's academic background and to rther individual career goals. The minor es not lead to credentialing in the field of etetics without further study.

SN 101 - Introduction to Food and Nutrition 3
nd 15 credits from the following courses:
FSN 103 - Science of Food Preparation 3
FSN 202 - Foodservice Management 4
FSN 230 - Nutritional and Medical Terminology 1
FSN 238 - Applied Food Microbiology and Sanitation 3
FSN 270 - World Food and Nutrition 3
FSN 280 - Human Nutrition for the Health Professions 3
FSN 301 - Life Cycle Nutrition 3
FSN 330 - Introduction to Food Science 3
FSN 401 - Community Nutrition 4
FSN 410 - Human Nutrition and Metabolism 3
FSN 420 - Abnormal Nutrition 4
FSN 430 - Counseling and Diet Therapy 3
FSN 436 - Food Law 3
FSN 482 - Food Chemistry 3

andscape Horticulture: 24-25 credits)

The courses, which make up the minor in andscape Horticulture, are to be selected rom the following approved list in consultaion the Program Coordinator.

Program Requirement: All prerequisites listed for LHC courses must have a grade of a C- or higher before any upper level LHC courses can be taken.

LHC 110 - Horticultural Science 3
LHC 219 - Herbaceous Landscape Plants 3
LHC 370 - Seminar in Landscape Horticulture 2
PSE 100 - Plant Science 4
PSE 140 - Soil Science 3
PSE 141 - Soil Science Lab 1
One of the following:
LHC 221 - Woody Landscape Plants I 3
LHC 222 - Woody Landscape Plants II 3
One of the following:
LHC 325 - Turfgrass Management 3
LHC 328 - Landscape Design 4
LHC 423 - Plant Production 4
One of the following:
BIO 327 - Introductory Applied Entomology 4
BIO 452 - Plant Physiology 3
BIO 453 - Plant Physiology Laboratory 1
BIO 464 - Taxonomy of Vascular Plants 4
LHC 225 - Landscape Graphic Communication 3
LHC 227 - Landscape Construction 4
LHC 410 - Plant Propagation 3
PSE 457 - Plant Pathology 4

Microbiology: (18 credits)

BMB 300 - General Microbiology 3
BMB 305 - General Microbiology Laboratory 2
BMB 322 - Biochemistry 3
BMB 323 - Introductory Biochemistry Laboratory 1
Plus 9 credits of upper level microbiology courses required for the major. 9

Molecular and Cellular Biology: (18 credits)

BMB 280 - Introduction to Molecular and Cellular Biology 3
BMB 322 - Biochemistry 3
BMB 323 - Introductory Biochemistry Laboratory 1
BMB 400 - Molecular Genetics 3
Upper level courses offered by the department and required for the major. 8

Plant Science: (22-24 credits)

BIO 452 - Plant Physiology 3
BIO 453 - Plant Physiology Laboratory 1
PSE 100 - Plant Science 4
PSE 101 - Cropping Systems 4
or LHC 423 - Plant Production 4
PSE 140 - Soil Science 3
PSE 141 - Soil Science Lab 1
Plus two courses from the following list:
BIO 445 - Plant Genetics 3
BIO 464 - Taxonomy of Vascular Plants 4
LHC 410 - Plant Propagation 3
PSE 320 - Soil Organic Matter Management 3
PSE 403 - Weed Ecology and Management 3
PSE 423 - Wetland Ecology and Conservation 4
PSE 440 - Soil Chemistry and Plant Nutrition 3
PSE 457 - Plant Pathology 4
PSE 479 - Crop Ecology and Physiology 3

Resource and Agribusiness Management: (18 credits)

Other courses may be substituted with the consent of the student's advisor and REP Undergraduate Coordinator.

INT 110 - (ECO, REP) Modern Economic Problems 3
REP 254 - Introduction to Production Economics 3
REP 458 - Principles of Resource Business Management 3
REP 465 - Food and Fiber Marketing 3
Plus two courses selected from the following:
EES 324 - Environmental Protection Law and Policy 3
REP 286 - Resource Policy Analysis 3
REP 330 - Waste Management 3
REP 371 - Introduction to Natural Resource Economics and Policy 3
REP 381 - Sustainable Development Principles and Policy 3
REP 459 - Resource Based Business Finance 3
REP 466 - Internet Marketing: Food and Fiber Products 3
REP 468 - Quantitative Analysis and Forecasting 3
REP 471 - Economics of Environmental and Resource Management 3
REP 474 - Land Use Planning 3

Soil Science: (20-22 credits)

PSE 140 - Soil Science 3
PSE 141 - Soil Science Lab 1
PSE 440 - Soil Chemistry and Plant Nutrition 3
PSE 442 - Soil Genesis, Morphology and Classification 3
PSE 444 - Field Soil Morphology and Classification Techniques 1
Plus three from the following list:
FTY 457 - Forest Watershed Management 3

GES 109 - Geology of Maine 3
PSE 100 - Plant Science 4
PSE 105 - Principles of Sustainable Agriculture 3
PSE 320 - Soil Organic Matter Management 3
PSE 344 - Soil and Water Quality 3
PSE 413 - Wetland Delineation and Mapping 4
PSE 469 - Soil Microbiology 4

Sustainable Agriculture: (20-22 credits)

PSE 101 - Cropping Systems 4
PSE 105 - Principles of Sustainable Agriculture 3
PSE 140 - Soil Science 3
PSE 141 - Soil Science Lab 1
REP 381 - Sustainable Development Principles and Policy 3
Plus two courses from the following list:
BIO 448 - Insect Pest Ecology and Management 3
INT 482 - (BSC, PSE) Pesticides and the Environment 3
PSE 320 - Soil Organic Matter Management 3
PSE 403 - Weed Ecology and Management 3
PSE 479 - Crop Ecology and Physiology 3

Zoology: (18 credits)

BIO 100 - Basic Biology 4
BIO 200 - Biology of Organisms 4
or BIO 208 - Anatomy and Physiology 4
Three courses, at least two of which must be primarily animal courses (A, not A/P) from Biological Sciences Area III-V in Zoology BA and BS programs (10 cr.)