



# Undergraduate Catalog 2015–16



[catalog.umaine.edu](http://catalog.umaine.edu)

Office of Student Records  
[umrecord@maine.edu](mailto:umrecord@maine.edu)

# Table of Contents

|   |     |   |      |
|---|-----|---|------|
| Disclaimers.....                              | 3   | College of Liberal Arts & Sciences .....                  | 205  |
| Presidents Message .....                      | 4   | College of Natural Sciences, Forestry & Agriculture... .. | 376  |
| Academic Calendars .....                      | 5   | Division of Lifelong Learning.....                        | 591  |
| University Overview .....                     | 7   | University Wide Academic Programs .....                   | 620  |
| Admission.....                                | 8   | The Honors College.....                                   | 626  |
| Academic Requirements for Admission.....      | 16  | Course Descriptions .....                                 | 629  |
| New England Regional Student Program.....     | 18  | Enrollment Status.....                                    | 1278 |
| Advance Placement Table.....                  | 20  | Grades and Grading .....                                  | 1282 |
| College Level Examination Program Table.....  | 22  | Academic Standing.....                                    | 1286 |
| Financial Aid .....                           | 23  | Degree/Graduation Requirements.....                       | 1289 |
| Expenses and Fees .....                       | 28  | Transfer Credit .....                                     | 1324 |
| Explanation of University Fees.....           | 35  | Official Records.....                                     | 1327 |
| Estimated Expenses .....                      | 38  | The University of Maine System Board of Trustees ..       | 1328 |
| Auxiliary Services .....                      | 41  | Named Professorships and Chairs .....                     | 1330 |
| Student Services and Facilities.....          | 43  | Award Recipients .....                                    | 1332 |
| Facilities and Centers .....                  | 51  | Officers of the University of Maine .....                 | 1334 |
| Abbreviations.....                            | 55  | Full Time Faculty .....                                   | 1341 |
| The Maine Business School.....                | 60  | Part-time Faculty .....                                   | 1379 |
| College of Education & Human Development..... | 86  | Emeriti .....   | 1400 |
| College of Engineering .....                  | 126 |   |      |

# Disclaimers

Information in this Catalog covers the year 2015-2016

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

The University of Maine does not discriminate on the grounds of race, color, religion, sex, sexual orientation, including transgender status and gender expression, national origin, citizenship status, age, disability, genetic information or veteran's status in employment, education, and all other programs and activities. The following person has been designated to handle inquiries regarding non-discrimination policies: Director, Office of Equal Opportunity, 101 North Stevens Hall, 581-1226.

## 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 and Diversity, The University of Maine, Room 101, 5754 North Stevens Hall, Orono, ME 04469-5754; (207) 581-1226 (voice and TDD).

# President's Message

## Welcome to the University of Maine!

Education has the power to markedly change and improve lives. At the University of Maine, we are committed to empowering our more than 11,200 undergraduate and graduate students to make a difference in their lives and in the world around them through active learning and public service.

UMaine offers 90 undergraduate majors and academic programs, the state's largest graduate education program, and one of the nation's oldest and most prestigious honors programs. Nationally and internationally recognized faculty, researchers and scholars interact with UMaine students, who come from across Maine, the United States and more than 65 countries, greatly enriching the undergraduate experience.

UMaine is ranked among the National Science Foundation's top research universities and has been recognized with the Community Engagement Classification from the Carnegie Foundation for the Advancement of Teaching. Undergraduate students have opportunities to be active participants in research in the laboratory and in the field. The UMaine student experience includes internships, co-ops, or study abroad or volunteer opportunities, as well as participation in some of the more than 200 student organizations.

The University of Maine is also home to the state's only Division I athletics program, unique cultural facilities and the state's largest library. UMaine is committed to developing and sustaining a multicultural and pluralistic educational community. It also is dedicated to environmental stewardship on campus and beyond as part of its leadership in sustainability.

This catalog is a primary source of information as you pursue your academic career at the University of Maine. We welcome you as part of our UMaine community and look forward to seeing just how far your aspirations will take you.

Susan J. Hunter  
President

# Academic Year Calendar

## 2015-2016 ACADEMIC YEAR CALENDAR

Class information is based on full semester classes.  
MaineStreet provides information on non-standard dated classes.

For information about Winter Session and Summer Session classes,  
please see MaineStreet's Schedule of Classes.

### Fall 2015

|   |                                |
|---|--------------------------------|
| Classes begin   | Monday, August 31              |
| Last day to add courses   | Friday, September 4            |
| No Classes Labor Day  | Monday, September 7            |
| Last day to drop classes  | Sunday, September 13           |
| Classes dropped on or before this date will not appear on transcript  | Thursday, October 1, 4:30 p.m. |
| Fall break begins   | Monday, October 12             |
| Classes resume  | Wednesday, October 14          |
| Registration for Spring 2016 (tentative)  | October 26 - November 20       |
| Veteran's Day (classes canceled except those that meet once a week)   | Wednesday, November 11         |
| Last day to withdraw from a class and receive 'W' grade (Withdrawn classes after this date will receive failing grade.) | Friday, November 13, 4:30 p.m. |
| Application for Graduation filing deadline (Dec)  | Monday, November 16            |
| Thanksgiving break begins   | Wednesday, November 25         |
| Classes resume  | Monday, November 30            |

|                   |                     |
|-------------------|---------------------|
| Classes end       | Friday, December 11 |
| Final exams begin | Monday, December 14 |
| Final exams end   | Friday, December 18 |

| <b>Spring Semester 2016</b>   |                                  |
|---|----------------------------------|
| Classes begin   | Tuesday, January 19              |
| Last day to add courses   | Monday, January 25               |
| Last day to drop courses  | Monday, February 1               |
| Classes dropped on or before this date will not appear on transcript  | Thursday, February 18, 4:30 p.m. |
| Spring recess begins  | Monday, March 7                  |
| Application for Graduation filing deadline (May)  | Tuesday, March 15                |
| Classes resume  | Monday, March 21                 |
| Registration for Fall 2016 (tentative)  | March 28 - April 22              |
| Last day to withdraw from a class and receive 'W' grade (Withdrawn classes after this date will receive failing grade.) | Wednesday, April 13, 4:30 p.m.   |
| Maine Day (tentative)   | Wednesday, May 4                 |
| Classes end   | Friday, May 6                    |
| Final exams begin   | Monday, May 9                    |
| Final exams end   | Friday, May 13                   |
| Commencement  | Saturday, May 14                 |

# University Overview

The University of Maine, established in Orono in 1865 under the provisions of the federal Morrill Act, is celebrating its 150th anniversary in 2015. As Maine's land grant institution and sea grant college with a statewide mission of teaching, research and community engagement, the university extends the resources of its learning community to address the educational, economic, cultural and social needs of Maine.

Through its five-year strategic plan, the university aspires to be the most distinctively student-centered and community-engaged of the American research universities. It has seven Signature Areas of Excellence in education and research - forestry and the environment, marine sciences, S'STEM education, climate change, advanced materials for infrastructure and energy, College of Engineering and Honors College. UMaine's Emerging Areas of Excellence focus on the Graduate School of Biomedical Science and Engineering, Northeastern Americas humanities, data science and engineering, sustainability solutions and technologies, aging research and finance education.

The University of Maine is one of the nation's major public institutions of higher education, and the state's center for research and graduate education. Maine's flagship university enrolls 11,286 undergraduate and graduate students from across the U.S. and more than 65 countries. The University of Maine offers doctoral degrees in 35 fields, representing the humanities, sciences, engineering and education; master's degrees in 70 disciplines; 90 undergraduate majors and academic programs. The research and scholarship of UMaine faculty members and graduate students greatly enrich the undergraduate experience. As a research university, UMaine offers undergraduates opportunities to be active participants in research, working with the university's world-class scholars.

The university has the state's largest mix of nationally and internationally recognized faculty, researchers and scholars, representing some of the most respected minds in their fields. Among the state's public universities, UMaine awards 37 percent of all four-year degrees, 47 percent of all master's degrees, and 82 percent of Maine's Ph.D.s and Ed.D.s. More than 1,600 students graduate from the university annually, joining approximately 105,000 alumni.

The University of Maine has the Maine Business School and five colleges - College of Engineering; College of Natural Sciences, Forestry, and Agriculture; College of Education and Human Development; and College of Liberal Arts and Sciences. UMaine's Honors College offers one of the oldest honors programs in the country.

The university's commitment to lifelong learning goes beyond its academic degree programs to include its statewide outreach through University of Maine Cooperative Extension and other public service programs and departments, its involvement in public schools, and its accessibility through continuing education opportunities.

The University of Maine conducts nationally and internationally recognized research, and is in partnership with the private and public sectors to stimulate and support the state's economic growth and development. The university makes an impact on Maine's quality of life through basic and applied research in venues from the Gulf of Maine and Maine's forestlands to the high-tech laboratories.

The University of Maine is also home to unique cultural facilities. The Collins Center for the Arts on campus is one of the state's premier performing arts facilities, attracting some of the world's most prestigious artists to the region. The university's School of Performing Arts and Department of Art are two of the strongest cultural forces in the academic arts in the state. The Museum of Art has the largest fine arts collection owned by the citizens of Maine. The Hudson Museum has one of the finest collections of pre-Columbian artifacts in North America. Page Farm and Home Museum celebrates Maine's history of farms and farming communities. The university also is the home of the state's largest library and the new Emera Astronomy Center, with the state's largest planetarium and telescope.

Annually, thousands of people travel to the university to be part of its learning community, to enjoy the natural beauty of the campus, and to take advantage of opportunities ranging from Division I sports events to internationally renowned speakers and theater programs. The university is committed to developing and sustaining a multicultural and pluralistic educational community that encourages the full participation of all its members. UMaine also promotes environmental stewardship on campus as part of its leadership in sustainability, with substantial efforts aimed at conserving energy, recycling and adhering to green building standards in new construction.

# Admission

## Admission

Admission to the University of Maine is selective. 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 is in Chadbourne Hall and the Visitors' Center is in the Buchanan House. Both are located at the south entrance to campus. In addition to several daily tours during the business week, numerous open houses and selected Saturday tours and information sessions are also offered. To learn more or to schedule a visit, please visit our web page at <http://www.umaine.edu/visit/> or contact the Visitors' Center at (207) 581-3740 or Admissions toll-free at 1-877-4UM-ADMIT (486-2364), or via e-mail at [umaineadmissions@maine.edu](mailto:umaineadmissions@maine.edu).

## Academic Entrance Requirements

Academic course requirements for admission to the University are established by each of the five undergraduate colleges (click here to view the Academic Requirements for Admission ). 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 provide an official copy of the General Equivalency Diploma (GED) or the HiSET test results as approved by the Department of Education.

## Applying for Admission

Candidates are encouraged to apply electronically by contacting our undergraduate admission website at [www.go.umaine.edu](http://www.go.umaine.edu). Application forms are also available to download from that site and they 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 [umaineadmissions@maine.edu](mailto:umaineadmissions@maine.edu). The University of Maine is a member of the Common Application Group, and is happy to accept either the common application available at [www.commonapp.org](http://www.commonapp.org) or the University of Maine System Application available on the UMaine web site.

## Permanent Resident Candidates

Candidates who are permanent residents of the United States, and hold a resident alien card issued by the United States Immigration and Naturalization Service, must submit their A number (at the time of application.) This is required to document the candidate's status with the I.N.S. Permanent residents should use the regular undergraduate application. Other international applicants should refer to the section on International Admission. Permanent residents for whom English is not their first language may be required to take the Test of English as a Foreign Language (TOEFL) or The English Language Proficiency Test (ELPT). This requirement 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. Permanent residents will be notified if a TOEFL is required after their application has been received.

## Early Action Admission Program

Students wishing to participate in UMaine's non-binding Early Action Admission Program for the upcoming fall semester should have a completed application on file in the Office of Admission or postmarked by December 15. Decisions will be made by the



end of January. Early Action candidates will be given preference for Honors College review and merit scholarships that are awarded by the Office of Admission.

#### Regular Admission and Recommended Filing Dates

The Office of Admission reviews fall applications received after December 15, early action candidates deferred to the regular admission process, and spring applications on a modified rolling basis as long as space is available. First-year applicants for fall semester entrance applying through the regular admission process are encouraged to submit a complete application by February 1 to receive full consideration for financial aid and campus housing. 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 that are received after the filing date are considered based on space and funding availability. It is to the applicant's advantage to apply as early as possible in the admission cycle.

#### Admission Condition

Candidates approved for admission prior to the completion of their current academic work are accepted contingent upon successful completion of all academic work and the receipt of an official transcript of grades. Final high school transcripts must contain the date of high school 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.

#### Misconduct at Another Institution or Conviction of a Misdemeanor, Felony or Other Crime

Two questions regarding misconduct at other institutions and misdemeanor, felony and other crimes are included on the application. These questions must be answered in order to be considered for admission. If either question is answered with a yes response, further review will be necessary which may delay the student's admission decision.

#### 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 \$40.00 fee, students must submit official high school transcripts complete through the most recent set of grades available at the time the application is submitted, results from the SAT or ACT standardized test\* and an official letter of recommendation from their high school, usually from the guidance counselor. Students offered admission are required to submit their final high school transcript, complete with date of graduation, as soon as it is available, to complete their admission application.

Home-schooled students must also submit the above listed necessary documents, replacing the high school transcript with a listing and description of coursework completed and competency level achieved. Home-schooled applicants are encouraged to submit official results from the General Equivalency Diploma (GED) or HiSET test results to certify the completion of high school or its equivalent. Those who choose not to submit the GED must submit detailed course descriptions (including texts and curriculum used) and are encouraged to submit the results of SAT II subject exams in academic areas relevant to their intended major.

\*not required of applicants who are at least 20 years of age at the time of application and who have never attended a post secondary institution.

##### **Standardized Test Policy**

First year candidates are required to submit their results on the Scholastic Aptitude Test (SAT) or the American College Test (ACT). The University will consider only the highest standardized test scores from the combined SAT Critical Reading and Mathematics tests or the ACT composite score. The highest individual test results for the SAT Critical Reading test and the SAT Mathematics test will be used from the same or multiple test administrations to create the highest composite SAT score. The score from the SAT writing test is not used in the admission decision process, therefore for admission purposes, the composite SAT score includes two and not three sets of test scores with a maximum total of 1600 possible. Because only the highest scores

are used, candidates are encouraged to submit all test results from all test administrations. When reporting test score information for the incoming class, UMaine reports only the test scores (SAT or ACT) that were used in the admission decision and not all test scores submitted by an applicant.

### 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 at least a 2.00 on a 4.00 scale from accredited colleges or universities, and have met academic course requirements, are considered for transfer admission. 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 limited space or more competitive entrance criteria such as the nursing program, programs in the Maine Business School, programs in the College of Education and Human Development, and programs in the College of Engineering.

Along with the application and required fee, transfer students must submit an official final high school transcript showing date of graduation and official transcripts of all attempted college-level coursework. Transfer 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 Credit section in this catalog for complete information on the University's policies for awarding transfer credit.

Students who are unable to obtain an official transcript(s) due to financial indebtedness at other colleges or universities 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 and information that would negate the likelihood of a repetition of the conduct or conditions which led to the dismissals or suspensions.

### New Media

First year and transfer admission to the New Media Program is available for qualified candidates for all "year-one" students. Continuing status and admission to upper-level classes is, however, limited and highly competitive. A "year-one" student is any student, regardless of number of credits earned, who has not taken all required first year courses in New Media and/or whose portfolio has not been approved by the New Media faculty.

All entering first year students will, at the end of their first year sequence (May of each year), present a portfolio to the New Media faculty for review. Transfer students, including those changing majors, may submit a portfolio at any time, either after taking the first year sequence, or at an earlier time if they choose. Each student's work will be evaluated and the student will be granted or denied continuing status on the basis of academic, artistic and technical merit. If granted continuing status, students will then be allowed to take intermediate and advanced level classes in New Media.

All "year-one" students denied continuing status will be given a written review of the submitted portfolio, so that if they choose, they may work to improve the portfolio and reapply to the New Media Program. Any year one student who is denied continuing status may continue to take 100 level NMD classes, courses in related areas, and open enrollment NMD classes, but will not be allowed to take core, intermediate and upper level new media classes. A student may reapply for continuing status one additional time in the next year. Students who are not awarded continuing status in the New Media Program may enroll in another program at the university provided they meet program requirements.

### 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 academic standing. These materials are to be mailed directly to the Office of Undergraduate Admission, 5713 Chadbourne Hall, Orono, ME 04469-5713 from the originating institution. Admission to the nursing program is competitive, based on both the applicant's credentials and space available in the program. Admission to the Nursing program is extremely competitive and limited because of restricted space.

## College of Education and Human Development Transfer Students for Teaching Certification Programs

Effective January 2008, the college of Education and Human Development requires students who transfer into a teacher certificate program to successfully pass PRAXIS I, based on the state of Maine requirements, after 1 semester of attendance at UMaine. Transfer students with 45+ credits not passing PRAXIS I after one semester will not be allowed to continue in a teacher certificate program. All transfer students for any College of Education and Human Development program must have a minimum grade point average of 2.5 on a 4.0 scale to be considered for admission. Transfer admission is competitive and will be based on achievement in appropriate academic coursework and available test scores.

### Readmission

Former University of Maine degree candidates planning to return to the campus to resume undergraduate work must complete a Re-admit Form and submit it to the academic dean of the undergraduate college or the director of the program in which enrollment is sought. Candidates will be notified by the dean's office of the readmission decision.

On the Re-admit form students must answer three questions regarding misconduct at other institutions and misdemeanor, felony and other crimes. These questions must be answered in order to be considered for re-admission. If any question is answered with a yes response, further review will be necessary which may delay the student's reentry date. Students normally seeking re-admittance to the university less than thirty days prior to the start of the semester may not be processed in time to fully serve the returning student. Specific classes, housing and other services may not be available as the start of the semester approaches.

**Time Limitations of Course Work:** Some subject areas have changed dramatically over time. Courses over ten years old will be subject to additional review to determine if they are in fields where there have been significant changes making the material outdated. Those courses that are determined to be missing important new material will be excluded from applying to the degree program upon readmission.

### 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 completing a Request to Reactivate Admissions Application form (available at <http://go.umaine.edu/files/2009/05/reactivation-form.pdf>). A \$40.00 application fee is required. Students must provide official transcripts of all academic work that has been attempted since the application was first filed and a final high school transcript showing the date of graduation if one is not already on file.

On the Reactivation form students must answer two questions regarding misconduct at other institutions and misdemeanor, felony and other crimes. These questions must be answered in order to be considered for re-admission. If any question is answered with a yes response, further review will be necessary which may delay the student's reentry date. Students normally seeking re-admittance to the university less than thirty days prior to the start of the semester may not be processed in time to fully serve the returning student. Specific classes, housing and other services may not be available as the start of the semester approaches.

### Early Admission (high school juniors)

Upon the recommendation of high school principals and guidance counselors, the University will consider candidates prior to high school graduation 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 (SAT I) or the ACT examination. Candidates are requested to arrange an on-campus interview and will also be required to have the support and endorsement of their parents or legal 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 to confirm their plans to attend the university, 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 the beginning of the semester in which the applicant was originally offered admission: 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 made in writing to the Admissions Office and 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 confirm their plans to attend the University and submit a \$150 enrollment deposit by May 1. Students choosing to deposit before May 1 may request a refund in writing postmarked no later than May 1. Deposits are not refundable after May 1. Students accepted after May 1 must confirm their plans to attend and submit a 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. Questions about the enrollment deposit should be directed to the Admissions Office.

#### 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 (click here to view New England Regional Student Program Table ).

Each participating New England public college or university has designated the academic majors to be offered on a regional basis and maintains control over its own courses and programs.

Eligible undergraduate programs begin during the student's first year of enrollment at the University. Currently enrolled students who change their major to a regional major must notify the Office of Student Records, Wingate Hall, Room 201. Tuition reduction under the Program takes effect the semester following notification.

The qualifying (regional) major must be the student's primary major. To maintain the discounted tuition rate, students must be progressing toward on-time graduation in the given major. Progress will be assessed at the end of each academic year, and students judged not to be making progress in the regional major will be removed from the Program and charged full non-resident tuition the following semester. In addition, students who change their major to a non-qualifying major will be charged full non-resident tuition the following semester.

Information about the Program 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](http://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. Applicants can apply by downloading an application from their website ([www.umaine.edu/international](http://www.umaine.edu/international)) or online at <http://apply.maine.edu/>. The Common Application is also accepted. A printed application may be requested from the Office of International Programs at 6727 Eastabrook Hall, Room 250, 15 Estabrooke Drive, Orono, ME 04469-5782. The telephone number of the Office of International Programs is (207) 581-2905 and the email address for an application or admission questions is [umintadm@maine.edu](mailto:umintadm@maine.edu).

Candidates are required to submit the completed application, an application fee of \$40.00 payable by check, money order, credit card or bank draft in US dollars, official results of TOEFL or IELTS (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 copies of bank statements and official affidavits of support and must be less than one year old. These documents must be English. The University requires a TOEFL score of 580 paper/79 Internet based for regular admission.

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 580/79, or IELTS of 6.5 for regular admission, and professionally evaluated transcripts. Suggested evaluation services are listed on the website of the Office of International Programs at [www.umaine.edu/international](http://www.umaine.edu/international).

Students whose English does not meet the University of Maine's standard may be admitted to the Intensive English Institute for English preparation if their academic background meets regular admission standards. Information about the Intensive English Institute at UMaine is available at [www.umaine.edu/iei](http://www.umaine.edu/iei)

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 15.

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

Applications for the International Student Tuition scholarship can be obtained from the Office of International Programs or by downloading an application as per the information provided above. International student applicants must submit a separate application for the scholarship if they wish to be considered. The deadline for applications is February 1.

#### Placement Tests

The department of Mathematics and Statistics administers placement examinations for the purpose of appropriate registration in introductory level mathematics courses. Information about the Mathematics placement test is sent to all newly accepted applicants and is available on the UMaine web site. The Department of Modern Languages and Classics offers the Foreign Language Placement Examination for purposes of both placement and credit. For more information about the Foreign Language Placement Examinations, visit <http://umaine.edu/mlandc/placement-exams/>.

#### Advanced Placement (AP)

The University of Maine awards credit for successful completion of most AP exams according to the Advanced Placement Credit Table (Click here to view Advanced Placement Credit Table). Students should request copies of their scores to be sent directly to the Office of Student Records for evaluation and awarding of transfer credit.

#### Division of Lifelong Learning Admission

The University of Maine offers a variety of academic programs through the Division of Lifelong Learning. 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 DLL. Students seeking admission must file applications with the undergraduate Office of Admission or the Graduate School.

**Non-degree Students:**

Students interested in taking University of Maine courses for personal or professional enrichment are advised to contact DLL 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 DLL and Summer Session division. Interested candidates should contact the DLL 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 <http://dll.umaine.edu/>. All applications for admission and supporting documents should be submitted to the Office of Admission, 5713 Chadbourne Hall, The University of Maine, Orono, ME 04469-5713.

**High School Aspirations Incentive Program**

This program provides the opportunity for Maine high school students, who are attending a public Maine high school or a private Maine high school that has been authorized to receive public funds to attend college courses at the University of Maine and is designed to enhance, not replace, the students' high school curriculum. Tuition waivers (based on available funding) may be available for fall and spring courses. All registration information and grades earned will become a part of the student's permanent academic record; all grades earned will be included in the student's cumulative grade point average at the University of Maine in accordance with academic policy.

The High School Aspirations Incentive Program is designed for traditional Maine high school students who are attending Maine high schools that have been approved to participate in the Aspirations Program and 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 attending approved Maine high schools and 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 may pay one-half of the in-state tuition cost per credit hour (most courses are three credits) depending on funds available for the program. Out-of-state students attending Maine high schools are eligible to participate, but will be charged based on the out-of-state tuition cost per credit hour. Funding is based on the availability of University financial resources and funding by the Maine State Department of Education. Courses successfully completed and credits earned may be applied toward a University of Maine undergraduate degree.

Courses may be taken during the fall and spring semesters, only rarely are funds available for summer courses. 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. Distance courses such as web based courses, compressed video (CV) and Interactive TV (ITV) are not approved for this program. 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. All registration information and grades will become a part of the student's permanent academic record, all grades earned will be included in the student's cumulative grade point average at the University of Maine in accordance with academic policy.

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.

(Click here to view the College Level Examination Program table )

If you have already taken one of these tests, submit an official score report to the Office of Student Records.

*CLEP Information and Policies*

1. The CLEP Testing Center is in 127 East Annex. Inquiries on procedure should be directed to (207) 581-2318.  
Registering for CLEP Exam may be done online. For more information, visit <http://umaine.edu/csp/clep>  
Duplicate credit may not be granted.
2. Each department is free to develop or adopt examinations other than CLEP examinations for the purpose of granting credit for specific courses.

# Academic Requirements for Admission

The University of Maine

Academic Requirements for Admission (in units)

All students selected for admission to the University of Maine must meet the admission requirements listed below. Students may fulfill certain math and foreign language requirements in middle school. High school level computer sciences and fine arts courses are strongly recommended but not required.

| English | Algebra 1 and 2 | Geometry | History / Social Sciences | Computer Sciences | Fine Arts |
|---------|-----------------|----------|---------------------------|-------------------|-----------|
| 4       | 2               | 1        | 2                         | S-1               | S-1       |

| College / School   | Degree(s)     | Senior Math | Foreign Language | Lab Biology                                   | Lab Chemistry                 | Lab Physics | Physical Education |
|--|---------------|-------------|------------------|---|-------------------------------|-------------|--------------------|
| <b>The Maine Business School</b><br>Accounting<br>Finance<br>Management<br>Marketing<br>International Business | B.S.          | 1           | 2                | 2 lab sciences                                |                               |             |                    |
| <b>Education and Human Development</b>   | B.S.          |             |                  |   |                               |             |                    |
| Child Development and Family Relations   | B.S.          |             | 2                |   |                               |             |                    |
| All education majors   | B.S.          |             | 2                | 1   |                               |             |                    |
| <b>Engineering</b>   | B.S.          | 1           |                  |   | 1                             | 1           |                    |
| <b>School of Engineering Technology</b>  | B.S.          | 1           |                  |   | S-1                           | 1           |                    |
| <b>Liberal Arts and Sciences</b>   | B.A. / B.F.A. |             | 2                | 1   | 1 additional lab science      |             |                    |
| <b>Liberal Arts and Sciences</b>   | B.S.          | 1           |                  | 2 lab sciences including Chemistry or Physics |                               |             |                    |
| <b>Natural Science Forestry and Agriculture</b>  | B.A.          | S-1         | 2                | 1   | 1 Either Chemistry or Physics |             |                    |



|  |      |     |  |   |   |  |
|--|------|-----|--|---|---|--|
| Natural Science<br>Forestry and<br>Agriculture | B.S. | S-1 |  | 1 |   |  |
| Nursing  | B.S. | S-1 |  | 1 | 1 |  |

**Units marked as "S-1" are strongly recommended by faculty for success in the program, but not required.**

Please refer to the Academic Program Fact Sheets for more specific degree entrance requirements.

# New England Regional Student Program

## The University of Maine 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. At UMaine, 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.

**Please note:** All programs listed are not eligible for students entering in all academic years, see footnotes below.

| Major (subject to review & change)        | Major Code | CT | MA | NH | RI | VT |
|---|------------|----|----|----|----|----|
| Athletic Training                         | ATR-BS     |    |    |    | X  |    |
| Bioengineering                            | BEN-BS     | X  | X  | X  | X  | X  |
| Botany                                    | BOT-BS/BA  |    | X  |    |    |    |
| Chemical Engineering                      | CHE-BS     |    |    |    |    | X  |
| Child Development and Family Relations    | CHF-BS     |    | X* |    |    |    |
| Construction Management Technology        | BCM-BS     |    | X  | X  | X  |    |
| Electrical Engineering Technology         | BET-BS     | X  |    | X  | X  | X# |
| Engineering Physics                       | EPS-BS     |    |    | X  | X  | X  |
| Environmental Horticulture###             | ENH-BS     |    |    |    |    | X  |
| Financial Economics                       | FIE-BA     |    |    |    |    | X  |
| Food Science & Human Nutrition            | FSN-BS     |    |    | X  | X  |    |
| Forest Ecosystem Science & Conservation## | FEC-BS     |    |    |    | X  |    |
| Forest Operations Science##               | FSC-BS     | X  | X  |    | X  | X  |
| Forestry                                  | FTY-BS     | X  | X  |    | X  |    |
| Landscape Horticulture##                  | LHC-BS     |    |    | X  |    |    |
| Marine Science                            | MAS-BS     | X  | X  |    |    | X  |
| Mechanical Engineering Technology         | BMT-BS     |    | X  | X  | X  | X  |

|                               |                   |   |    |    |   |   |
|-------------------------------|-------------------|---|----|----|---|---|
| New Media                     | NMD-BA            | X |    | X  |   | X |
| Parks, Recreation & Tourism   | PRT-BS            |   | X  |    | X |   |
| Public Management##           | PMG-BA            | X | X  |    | X |   |
| Pulp & Paper Technology       | PPA-BS / PPA-5YPP | X | X  | X  | X | X |
| Survey Engineering Technology | BST-BS            | X | X  | X  | X | X |
| Sustainable Agriculture       | SAG-BS            | X | X  | X# | X |   |
| Wildlife Ecology              | WLE-BS            | X | X* |    |   |   |
| Wood Science & Technology##   | WSC-BS            | X | X  | X  | X | X |
| Zoology                       | ZOL-BS/BA         | X | X  |    |   |   |

**Footnotes:**

*\*Beginning in the Fall of 2014*

*# These programs are no longer eligible for the RSP program for new students entering as of Fall 2012.*

*## No new students are being admitted into these programs.*

*### This program is no longer eligible for the RSP program for students entering as of the Fall 2014.*

Information in this chart is current as of August 2013. Please check [www.nebhe.org](http://www.nebhe.org) using their RSP database on-line look-up feature for the most up to date information.

# Advance Placement Table

The University of Maine  
Advanced Placement Credit Table

| AP Exam                       | Score | UMaine Course             | Credits |
|-------------------------------|-------|---------------------------|---------|
| Art ( <i>drawing/studio</i> ) |       | based on portfolio review |         |
| Art History                   |       | no credit given           |         |
| *Biology                      | 3     | BIO100                    | 4       |
| Biology                       | 4 5   | BIO100/200                | 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 | COS 120                   | 3       |
| Computer Science AB           | 3 4 5 | COS 120/100X              | 6       |
| Economics-Micro               | 3 4 5 | ECO 120                   | 3       |
| Economics-Macro               | 3 4 5 | ECO121                    | 3       |
| English Language & Comp       | 3     | ENG101                    | 3       |
| English Language & Comp       | 4 5   | ENG101/129                | 6       |
| English Literature & Comp     | 3     | ENG101                    | 3       |
| English Literature & Comp     | 4 5   | ENG101/129                | 6       |
| Environmental Sciences        | 3 4 5 | EES100                    | 3       |
| Foreign Lang. - French Lang.  | 3 4 5 | FRE305/306                | 6       |
| Foreign Lang. - French Lit.   | 3 4 5 | FRE310                    | 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 | SPA305/306               | 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 | HTY100X                  | 3 |
| Human Geography               | 3 4 5 | GEO201                   | 3 |
| Music Listening/Literature    | 3 4 5 | by special arrangement   |   |
| Music Theory                  | 3 4 5 | MUY101                   | 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 | MAT232                   | 3 |
|                               | 3 4 5 | MAT215 (business majors) | 3 |

\*Students majoring in Biology, Botany, Clinical Lab Sciences or Zoology who have a score of 3 will not receive credit for BIO 100. However, they will receive credit for BIO 100 and BIO 200 if they have a score of 4 or 5.

\*\*Students in the College of Engineering will not receive credit for AP Physics B; they are required to take PHY 121 and PHY 122 and would meet those requirements with AP Physics C-Mechanics and AP Physics C-Elect/Magnetism.

# College Level Examination Program Table

The University of Maine  
College Level Examination Program Table

To register for a CLEP exam, go to: <http://umaine.edu/csp/clep/>

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.

| <b>Name of Examination</b>                                 | <b>Passing Score</b> | <b>Substitutes for</b>  | <b>Credit Hours</b> |
|--|----------------------|-------------------------|---------------------|
| American Government  | 50                   | POS 100                 | 3                   |
| Analyzing and Interpreting Literature (w/essay)            | 50                   | ENG 129/170             | 6                   |
| Biology  | 50                   | BIO 100                 | 4                   |
| Calculus   | 50                   | MAT 126                 | 4                   |
| Chemistry  | 50                   | CHY121/123, CHY 122/124 | 8                   |
| College Algebra  | 50                   | MAT 111                 | 3                   |
| History of the United States I: Early Colonization to 1877 | 50                   | HTY 103                 | 3                   |
| History of the United States II: 1865 to the Present       | 50                   | HTY 104                 | 3                   |
| Human Growth and Development                               | 50                   | CHF 201                 | 3                   |
| Macroeconomics, Principles of                              | 50                   | ECO 121                 | 3                   |
| Microeconomics, Principles of                              | 50                   | ECO 120                 | 3                   |
| Precalculus  | 50                   | MAT 122                 | 4                   |
| 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                   |

# Financial Aid

## Financial Aid and Scholarships

The Office of Student Financial Aid administers a variety of Federal, State and University aid programs to help University of Maine students finance their education. 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. Student contact hours are weekdays throughout the year from 10:00 a.m. to 4:30 p.m., with expanded hours during peak seasons.

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, visit their website at <http://www.umaine.edu/stuaid/>, contact the office at (207) 581-1324, or via e-mail ([umfinaid@maine.edu](mailto:umfinaid@maine.edu)).

## Merit Scholarships

The Admissions Office presents scholarships to first-time undergraduate students based on academic performance, with the highest achieving students eligible for the greatest financial award. For specific eligibility for Merit Scholarships visit the Office of Admission's website at <http://go.umaine.edu/apply/scholarships>.

## 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/talent 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 and gives students the opportunity to earn spending money and/or living expenses while gaining valuable work experience. Job listings are available on CareerLink through the Office of Student Employment.

*Federal Direct Loans (subsidized and unsubsidized)* are available through the U.S. Department of Education 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 Direct Loan must complete an Entrance Counseling and Master Promissory Note (MPN) before the loan proceeds will be released. The Entrance Interview and MPN are completed electronically.

**NOTE: Subsidized loans are need-based loans and the government pays the interest on the loan while the student is enrolled at least half-time and during other authorized periods called deferments; 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 fixed and are set each academic year and are available on the Office of Student Financial Aid's website at <http://umaine.edu/stuaid/loans/>, the interest begins to accrue or to be paid by the student once the student enters into the six-month grace period; 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 by email if 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 remain eligible for financial aid until they have completed their first bachelor's degree. However, eligibility is impacted by academic performance. To maintain eligibility for financial aid, each student must make progress toward a degree according to the University's Satisfactory Academic Progress Policy: Students are measured once a year for Grade Point Average (GPA), completion of attempted credits and length of time it takes to complete their degree. See the section entitled "Satisfactory Academic Progress for Financial Aid Recipients" for more information on this policy.

Federal regulations limit financial aid funds to paying for one repetition only of a previously passed course even if a higher grade is still needed to advance in the academic program or is required for a subsequent course.

The Federal Pell Grant program now includes a limit on how much Pell Grant students are eligible to receive. Students may receive a maximum of 12 semesters (or 600%) of Federal Pell Grant eligibility during their undergraduate career.

The Federal Direct Loan program 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 ([http://studentaid.ed.gov/students/publications/student\\_guide/index.html](http://studentaid.ed.gov/students/publications/student_guide/index.html)).

Starting with the 2013-2014 academic year, students who borrow a Federal Direct Subsidized loan for the first-time will only be able to borrow up to 150% of the published length of the program of study. For a 4-year bachelor's degree program, the maximum period of subsidized loan eligibility is 6 years. More information on this regulation is available on the Federal Student Aid website (<http://ifap.ed.gov/eannouncements/attachments/051613DirectSubsidizedLoanLimit150PercentAnnounce1Attach.pdf>).

## Applying for Financial Aid

To allow 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)**. Students must apply for financial aid each year. Continuing students who applied for financial aid during the previous academic year should receive a reminder that their **FAFSA** can be accessed electronically with their FAFSA ID.

FAFSA application submitted over the Web ([www.fafsa.gov](http://www.fafsa.gov)) is strongly encouraged. For prior year applicants, some information can be "pre-filled" from a prior year's application by using his/her FAFSA ID. 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 FAFSA ID to electronically sign the FAFSA or a paper signature page can be printed from FAFSA on the Web, that then needs to be signed and mailed to the address provided.

Certain types of financial aid, including University Grant, Federal Supplemental Educational Opportunity Grant, Federal Work-Study are limited. Consequently, even students who are otherwise eligible will not initially be considered for these funds unless they meet our "**priority filing**" **deadline of March 1**. To meet our "priority filing" deadline, the student's FAFSA must be **received at the federal processing center by the March 1** deadline prior to the start of the Fall Semester for which the student wishes to receive financial assistance. Students selected for Federal verification by the Department of Education must provide information that verifies the data you provided on your FAFSA. This information could include, but is not limited to, using the IRS Data Retrieval Tool, an official tax transcript\*, your parent's official tax transcript\* and independent or dependent verification forms.

Requests for information will be through your MaineStreet To Do List and will include detailed instructions and links to specific forms. It is very important you respond to these requests by our document due date of May 15th and follow instructions closely otherwise your aid could be affected. 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 Web, 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 within 2-3 business days. The application will be reviewed and the student will be notified if any additional information (such as IRS Data Retrieval, verification forms, or other information) is required. Additional information requests, processes and documents are due by May 15<sup>th</sup>.

Once the student's file is complete, an offer of financial aid will be made available to the student. The student should accept (or reject) each type of aid offered, and follow all instructions 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 Subsidized Loan per Year | Maximum Loan Per Year (including subsidized and unsubsidized) |
|------------------------------|-------------|----------------------------------|---|
| Less than 24                 | First-year  | \$3,500                          | \$5,500   |
| 24 - 53                      | Sophomore   | \$4,500                          | \$6,500   |
| 54 - 83                      | Junior      | \$5,500                          | \$7,500   |
| 84 or more                   | Senior      | \$5,500                          | \$7,500   |

**NOTE: Federal regulations limit students who have already earned a bachelor's degree to only Federal Direct 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. Generally, financial aid is limited to any remaining Federal Pell Grant (if eligible) and/or any remaining Federal Direct Loan eligibility (subsidized and/or unsubsidized). Federal Work-Study or a University work program 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 for summer.

### **Withdrawal from All Classes**

If a student withdraws from the university after the semester begins, federal regulations stipulate that 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 must contact their academic area who will collaborate with the Office of Student Financial Aid to determine the impact of the withdrawal on financial aid. A copy of the policy is available in the Office of Student Financial Aid.

### **Institutional (Unofficial) Withdrawal**

Federal regulations require the Office of Student Financial Aid determine the last date of attendance for an academic related activity 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 to the University. You will be notified of any change. A copy of this policy is available 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 Office of Student Financial Aid. Students and families can meet with an advisor or contact the office at (207)581-1324 to explain their circumstances

### **Satisfactory Academic Progress for Financial Aid Recipients**

Federal financial aid regulations require financial aid recipients to make progress toward earning their degree, stay above specific GPA minimums and to complete the degree within a maximum time-frame. You can lose eligibility for aid if you are not doing well in your classes and/or frequently withdraw from classes and/or if it is taking you a very long time to earn your degree. If you are not meeting the minimum standards, even if you are allowed by your academic dean to continue your enrollment, you will have to do so without the benefit of financial aid.

Progress is reviewed once each academic year normally at the end of the spring semester. This review includes all attempted coursework, even if the student did not receive financial aid for some or all of that coursework. Students who are not meeting the minimum standards for Satisfactory Academic Progress are notified in writing on the MaineStreet Message Center of the loss of eligibility for further financial aid, effective the following enrollment period.

A copy of the Satisfactory Academic Progress Policy is available in the Office of Student Financial Aid, as well as on the Office of Student Financial Aid website at [umaine.edu/stuaid/sap/](http://umaine.edu/stuaid/sap/).

### **Satisfactory Academic Progress Appeal Procedure**

If you are not meeting the Satisfactory Academic Progress Policy, you can appeal if you believe that you have special circumstances that cause undue hardship. Appeals are considered by a committee. Please use the SAP Undergraduate Appeal Form (available at [umaine.edu/stuaid/sap/](http://umaine.edu/stuaid/sap/)), and submit along with appropriate supporting documentation. Students approved for appeal may be placed on SAP Financial Aid Probation for the next enrollment term, are eligible for financial aid during that term and may be required to meet a specific academic plan.

If financial aid eligibility is suspended a student can request a review of their record after completing additional academic coursework.

Questions about the policy or the appeal procedure can be referred to the Office of Student Financial Aid 207. 581.1324.

# Expenses and Fees

Billing Information and Related Policies

[Click here to view the Estimated Expenses for 2015/2016 .](#)

[Click here to view the Explanation of University Fees.](#)

## Invoices and Due Dates

One paper bill is mailed to the student's home address each semester. Charges are calculated using pre-registrations, room sign-up information, and data supplied by the Admissions Office. After the initial semester paper bill is sent, the student will be sent periodic monthly online updates regarding their financial status and will be notified via email to the student's @maine.edu email address. Students may view their accounts on Student Self-Service on MaineStreet. Students may authorize parents or other third parties to view and pay on their accounts on line. Instruction for adding an authorized user can be found at [umaine.edu/bursar/user/](http://umaine.edu/bursar/user/).

## Late Payment Fee

A \$100 late payment fee will be assessed to students who fail to pay their bills or fail to notify the Bursar's Office of any third party sponsorship or anticipated resources by the due date, (see Anticipated Resources) To avoid being charged the late fee, students who have not received a bill should contact the Bursar's Office.

## Anticipated Resources

With the first bill for the fall, spring and summer semesters, the student will use the Anticipated Resources area of Student-Self-Service on MaineStreet (Path: Student Self-Service / Self Service / Campus Finances / Anticipated Resources) to notify the University of any credits from other sources that are not shown on the billing statement (i.e. third party/sponsor payments, waivers, payroll deduction, loans). Instructions for entering anticipated resources can be found at [umaine.edu/bursar/resources/](http://umaine.edu/bursar/resources/)

## 3rd Party/Sponsor Billing

The student receives an invoice. The student will use the Anticipated Resources area of Student Self-Service on MaineStreet to notify the Bursar's Office of any third party sponsorship.

It is the student's responsibility to provide authorization (purchase order/authorization form) from the third party/sponsor.

The student sends the purchase order/authorization form, which indicates how much the third party/sponsor will be paying and any payment due for charges not being paid by the third party/sponsor to the Bursar's Office 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.

## Tuition Payment Plan

For those who find it convenient to make monthly payments, the University of Maine is pleased to offer the tuition payment plan administered by Higher One. Enrolling in a tuition payment plan is easy. Simply visit [tuitionpaymentplan.com/umaine](http://tuitionpaymentplan.com/umaine), choose the payment plan option that is best for you and follow the easy steps to complete your enrollment.

Please call Higher One at 1-800-635-0120 if you have any questions about the plan, and a specialist will be happy to assist you.

Please call the Bursar's Office with any billing questions at (207)581-1521.

Please direct financial aid questions to the Office of Student Financial Aid (207)581-1324.

## Financial Aid Refunds

A credit balance created by the disbursement of financial aid is normally disbursed to you by the start of each semester, unless you have requested that funds be held on your account. Excess financial aid will be held on your account if your financial aid award is based on full-time enrollment and your current enrollment is not full-time. Full-time enrollment for undergraduate students is 12 or more credits. For more information please visit [umaine.edu/bursar/refunds/](http://umaine.edu/bursar/refunds/).

## Refunds for Tuition and Fees

For refunding purposes the following definitions apply:

- "Standard" full semester classes are classes which are scheduled to start during the first week of a semester and meet through the end of that semester.
- "Non-standard" classes are classes whose starting and ending dates do not coincide with the starting and ending dates of the Fall or Spring semester including all Summer University classes. These classes fall into two groups:
  1. Classes with duration of less than 12 weeks in length.
  2. Classes with duration of 12 weeks or longer.
- The "Drop" period is the time frame a student may drop classes from their schedule without academic or financial penalties. For Standard full semester classes, the drop period ends:  
September 13, 2015 for Fall 2015  
  
February 1, 2015 for Spring 2016
- Dropping classes is a reduction in a student's class load during the Drop period while remaining enrolled in other classes at any of the University of Maine campuses.
- Withdrawing from classes is a reduction in a student's class load after the Drop period while remaining enrolled in other classes at any of the University of Maine campuses.
- A "Withdrawal from the University", either temporary or permanent, involves the student withdrawing from all classes at all University of Maine System campuses for which he/she is registered as well as notifying appropriate administrative officials of his/her decision to leave.
- Students who cease attendance, in any or all of their classes, without providing official notification are not entitled to a refund. If a student ceases attendance for emergency reasons, the University will accept a written appeal.

## For Withdrawals from the University:

| <b>"Standard" Full Semester classes and "Non-standard" classes of 12 weeks or more:</b> |                   |
|---|-------------------|
| Withdrawal  | Percent of Refund |
| Prior to the end of the second week   | 100%              |
| Prior to the end of the fourth week   | 75%               |
| Prior to the end of the sixth week  | 50%               |
| Prior to the end of the eighth week   | 25%               |
| After the eighth week   | 0%                |

| <b>"Non-Standard" short classes - classes of less than 12 weeks in length:</b>  |                   |
|---|-------------------|
| Withdrawal  | Percent of Refund |
| Withdrawal on or before the number of days equal to the number of weeks a class is scheduled. For example, for a six week course, a refund will be granted through the sixth day. | 100%              |
| After the number of days equal to the number of weeks a class is scheduled  | 0%                |

## For Dropped Classes:

| <b>"Standard" Full Semester Classes:</b>   |                   |
|--|-------------------|
| Withdrawal   | Percent of Refund |
| Prior to the end of the Drop Period <ul style="list-style-type: none"> <li>• Fall 2015 - September 13, 2014</li> <li>• Spring 2016 - February 1, 2016</li> </ul> | 100%              |
| After the Drop Period  | 0%                |

| <b>"Non-standard" classes:</b> |
|--------------------------------|
|                                |

| Withdrawal  | Percent of Refund |
|---|-------------------|
| Withdrawal on or before the number of days equal to the number of weeks a class is scheduled. For example, for a six week course, a refund will be granted through the sixth day. | 100%              |
| After the number of days equal to the number of weeks a class is scheduled  | 0%                |

## Determination of Attendance

For "standard" full semester classes, the attendance period begins on the opening day of scheduled university classes, includes weekends and holidays, and ends on the date the student notifies the University in writing, that he/she is withdrawing.

For "Non-standard" classes, including all Summer University classes, the attendance period begins on the start date of the class as specified on the class schedule of classes, includes weekends and holidays, and ends on the date the student notifies the University in writing, that he/she is withdrawing.

These policies are available on-line at <http://umaine.edu/bursar/dropwithdrawal-refund-policy>

## Room and Board Cancellations

For information on room and board cancellation policies, please refer to the University of Maine Housing Services website - <http://umaine.edu/housing/cancellation-fee/>

## 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

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:

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.

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.

Death of the student or an immediate member of the family - Appropriate documentation must accompany the request for withdrawal.

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.

Voluntary withdrawal - Voluntary withdrawal results from students who give official notification of their withdrawal to the university after a semester/session begins.

## General Information

The University expects the student to be financially responsible. All accounts are carried in the name of the student, regardless of the source of payment. Bills and statements are mailed to the student, not the parent.

All charges are payable in full by the due date on the invoice. After that, a \$100.00 late fee is assessed.

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 collection 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.

## 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.



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

## Residency Guidelines

Residency Classification: There are many factors which will be 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.

**Please note** that initial residency is determined by the Admissions office for matriculated undergraduate students, the Continuing & Distance Education office for non-matriculated undergraduate students, and the Graduate School for graduate students based on application information.

The decision, made by the University, shall be made 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 during such periods of time as 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. Individuals who have been granted in-state tuition under these conditions but then cease from active duty would continue to be granted in-state tuition. 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 tuition status, the following procedures are to be followed:

1. "Request for Change in Tuition Status" cover sheet and application must be filed with the Associate Bursar at The University of Maine, Bursar's Office, 5703 Alumni Hall, Orono, Maine 04469-5703 before 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.
  - a. Bursar & Senior Finance Officer. After receiving a written decision from this level within 30 days, the student has 30 days to submit a written appeal to:
  - b. The Chief Business Officer. After receiving a written decision from this level within 30 days, the student has 30 days to submit a written appeal to the President (or designee).
  - c. The President (or designee) will issue a final decision within 30 days.

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 Senior Associate Bursar or other designated official as set forth in the preceding paragraph.

## **New England Regional Student Program**

Expanded study opportunities are made available each year to New England residents through the New England Regional Student Program, administered by the New England Board of Higher Education. When a program is not offered at a student's home state institution, a qualified student may apply for enrollment at an out-of-state institution offering that program under the Regional Student Program. Depending upon the institution in which they enroll, students qualifying for study under the Program are charged either the institution's resident tuition or an amount 50 percent above the resident tuition.

Requests for detailed information should be directed to the Student Records office of participating state universities. It is essential that students read the individual catalog, since degree nomenclature differs by institution. Application for enrollment is made directly to the institution, which has sole authority over admissions. Applicants must clearly indicate, both in their initial inquiries and on their application forms, that they are seeking admission under the terms of the New England Regional Student Program. Further information is available from the New England Board of Higher Education, New England Regional Student Program, 45 Temple Place, Boston, MA 02111, (617)357-9620. Information about qualifying programs can also be found online at [www.nebhe.org](http://www.nebhe.org)

## **Canadian Resident Tuition Rate**

Residents of Canada are assessed reduced tuition equivalent to 50 percent above the resident tuition rate at The University of Maine.

# Explanation of University Fees

## Explanation of University Fees

**Activity Fee:** Activity fee funds are used by the Student Government associations to support various activities. For Undergraduates, the fee is \$45.00 per semester; for Graduate students it is \$40.00 per semester.

**Communications Fee:** The communications fee provides support to the student newspaper, The Maine Campus, WMEB, the student radio station and ASAP. The fee is \$15.00 per semester.

**Unified Fee:** The Unified fee is used to cover fixed costs of providing educational services that may not be directly related to the number of credit hours for which a student is enrolled. This fee supports activities such as student services, the operation of facilities such as student centers, and student-utilized, instruction-related technologies.

| Credit Hours                 | Per Semester |
|------------------------------|--------------|
| Less than 6                  | 125.00       |
| At least 6 but less than 12  | 381.00       |
| At least 12 but less than 16 | 934.00       |
| 16 or more                   | 958.00       |

**Recreation Center Fee** - The Recreation fee includes access to the Student Recreation and Fitness Center, The Maine Bound Adventure Center, open swims at Wallace Pool, and open recreation times in the Dome, Lengyel Gym, and Memorial Gym. This fee also includes unlimited Level I adult group exercise classes (excludes some classes) and Intramural Sports and Sport Club participation. Also included are reduced program fees for specialty fitness programs, Maine Bound Trips and courses, equipment rental, and other programs. This fee will only be assessed for credit hours taken on the University of Maine campus.

| Credit Hours | Per Semester |
|--------------|--------------|
| Less than 6  | 76.00        |
| 6 or more    | 126.00       |

**Student Health Insurance:** Student Health Insurance Plan (SHIP): In response to the new federal health insurance requirements for the college-age population, the University of Maine, in collaboration with the University of Maine System, is pleased to offer an affordable Student Health Insurance Plan (SHIP) for 2015.

All non-international undergraduate students enrolled in 9 credit hours or more and graduate students enrolled in 6 credit hours or more are required to show proof of adequate health insurance coverage. An annual health insurance charge of \$1,185 will be billed to eligible students in the fall semester. The cost for students eligible in the spring semester only is \$690. Students with adequate health insurance may complete an online waiver process to opt out of the plan before October 1. The coverage period is from August 1, 2015 through July 31, 2016. The spring semester only coverage period is January 1 to July 31.

Complete eligibility and enrollment criteria, the SHIP benefit summary, as well as the opt-out waiver/enrollment process are available online: [crossagency.com/umaineinsurance](http://crossagency.com/umaineinsurance)

**Graduate Assistant Health Insurance:** Graduate Assistant Health Insurance is mandatory for all graduate, research, and teaching assistants, unless proof of insurance is provided to the Graduate school. Cost of coverage is 2,732.00 for individual student coverage from August 30, 2015 through August 29, 2016.

**International Student Health Insurance:** International Student Health Insurance is mandatory for all international students, unless proof of insurance is provided to the Office of International Programs. Cost of coverage is \$2,340.00 for individual student coverage from August 1, 2015 through July 31, 2016.

**First Year Residential Experience Fee:** The First Year Residential Experience Fee is a one-time fee of \$50.00 is assessed to all first year residential students taking any credit hours on the UMaine campus. The First Year Residential Experience environment requires cutting-edge programming. The goals of the First Year Residential Experience fall into three broad categories: academic achievement, social integration, and student development. Specifically, the goals of the First Year Residential Experience include:

Increase student-to-student interactions.

Increase student-to -faculty interactions.

Create study environments in the Residence halls and promote/reinforce student academic endeavors.

Develop strong student study skills and study habits.

Create opportunities for altruism, activism, and citizenship development in the First Year Residential Experience.

Create social engagement opportunities between students.

Promote diversity and discussion around racial, ethnic, and social issues.

Create and promote mentoring and tutoring connections between students.

Support UMaine traditions, history, and lore.

Please contact Assistant Director for Residence Life, Kelly Beers, by email at [kelly.beers@umit.maine.edu](mailto:kelly.beers@umit.maine.edu) or by phone at 581-1420 with any questions concerning this fee.

#### Program Fees

**Business Program Fee:** A fee of \$33 per credit hour will be charged for each "BUA" course within the Maine Business School. The Business Program Fee is to cover the differential costs associated with Business Courses.

**Nursing Program Fee:** A fee of \$25 per credit hour will be charged for all nursing clinicals and labs. The **Nursing Program Fee is to cover the differential costs associated with Nursing Courses.**

**Social Work Program Fee:** A fee of \$25 per course will be charged for all Social Work practicums (Field Internships), within the School of Social Work. The Social Work Program Fee is to cover the differential costs associated Social Work Courses.

**Engineering Program Fee:** A fee of \$100 per course will be charged for all Engineering course designators within the College of Engineering. Military Science and Naval Science courses within the College of Engineering will not be charged this program fee. The Engineering Program Fee is to cover the differential costs associated with Engineering Courses.

**Applied Music Course Fee:** Music majors and some music minors will be charged a fee of \$30 for half hour private lessons or \$60 for one hour private lessons. Non music majors will be charged a fee of \$300 for half hour private lessons or \$600 for one hour private lessons.

**Travel Study Course Fee:** Travel Study Course Fee will be charged to students who choose to participate in a travel study course. The Travel Study Course Fee is to cover the differential costs associated with each travel study course and will vary by course.

**Tk20 Fee:** The College of Education uses Tk20 highered™ as a comprehensive online data management system for all student activities related to teacher or administrator certification for specific programs. Students enrolled in any these programs are required to purchase an account within Tk20 which will enable them to complete course assignments, build professional portfolios, and provide information regarding field experiences, student teaching and administrative internships. There is a one-

time, \$100 fee for a Tk20 account which will be assessed to the student's account when he/she activates the Tk20 account. The Tk20 account will be active for seven years after the date of activation.

**Online Fee:** A fee of \$25 per credit hour will be charged for all online courses. The Online Fee is used to support and enhance the quality of online programming and the student learning experience. Supported student services include, but are not limited to: online orientation, online tutoring, online proctoring, online library resources, universal design, and online Advisor support. In addition to these student services, the online fee helps foster excellence in course quality by supporting online faculty in learning design, adaptive learning tools, production assistance, and the use of emerging technologies and communications.

\* Note: Depending on your individual course of study additional program or course fees not listed here may apply.

#### Distance Education Fees\*

**Distance Education Technology fee:** A fee of \$6 per credit hour is assessed to all students enrolled in Interactive Television and Conference Video classes at sites, centers, and campus receive locations and to students enrolled in on-site courses (live instruction) at University College centers and sites. This fee is assessed to support up-to-date student computer labs and clusters at University College centers, and to ensure student access to internet-connected computers at Interactive Television receive locations. It also supports the phone bridge which many Interactive Television instructors use in their classes, and contributes to 1-800 access to help through Tech Support.

**Distance Education Support course fee:** A fee of \$12 per credit hour is assessed to all students enrolled in Interactive Television and Conference Video classes at sites, centers, and campus receive locations and to students enrolled in on-site courses (live instruction) at University College centers and sites. The Distance Education Support fee is to cover the differential costs associated with Interactive Television and Conference Video courses such as the handling and mailing of hand out materials, homework, and tests.

\* On behalf of University College (an administrative unit of The University of Maine at Augusta) the Distance Education Fees are charged on all Live, Interactive Television, Conference Video and online distance courses held at sites & centers and receive campuses of The University of Maine at Augusta. For questions concerning the assessment of these two (2) fees, please call the University College Tele Service line at 1-800-868-7000.

# Estimated Expenses

The University of Maine  
Expenses 2015/2016

## EXPENSES & FEES FOR MATRICULATING (DEGREE PROGRAM) STUDENTS

[Click here to view the Explanation of University Fees.](#)

| EXPENSE OR FEE                                    | SEMESTER    | ANNUAL      | ONE-TIME |
|---|-------------|-------------|----------|
| <b>TUITION-Based on 15 Credits per Semester</b>   |             |             |          |
| MAINE RESIDENT \$279.00/CREDIT HOUR               | \$4,185.00  | \$8,370.00  |          |
| NON RESIDENT \$888.00/CREDIT HOUR                 | \$13,320.00 | \$26,640.00 |          |
| NEW ENGLAND EXCHANGE (NEBHE) \$419.00/CREDIT HOUR | \$6,285.00  | \$12,570.00 |          |
| CANADIAN RESIDENT \$419.00/CREDIT HOUR            | \$6,285.00  | \$12,570.00 |          |
| <b>ROOM AND BOARD</b>                             |             |             |          |
| DOUBLE ROOM HOUSING                               | \$2,502.00  | \$5,004.00  |          |
| PREMIUM/LARGESINGLE                               | \$3,505.00  | \$7,010.00  |          |
| SINGLE ROOM HOUSING                               | \$3,126.00  | \$6,252.00  |          |
| SUITE DOUBLE HOUSING                              | \$2,804.00  | \$5,608.00  |          |
| SUITE SINGLE HOUSING                              | \$3,555.00  | \$7,110.00  |          |
| <u>MEAL PLANS PER SEMESTER*</u>                   |             |             |          |
| UNLIMITED MEALS + \$0.00 ON MAINECARD             | \$2,286.00  | \$4,572.00  |          |
| UNLIMITED MEALS + \$150.00 ON MAINECARD           | \$2,436.00  | \$4,872.00  |          |
| UNLIMITED MEALS + \$400.00 ON MAINECARD           | \$2,686.00  | \$5,372.00  |          |
| 120 MEALS + \$1,100.00 on MAINECARD               | \$2,407.00  | \$4,814.00  |          |

*\*Meals and dining funds carry over from the Fall semester to the Spring semester*

|   |            |            |  |
|---|------------|------------|--|
| <u>SENIORS FLEX PLAN</u> -\$2,436 on MAINECARD  | \$2,436.00 | \$4,872.00 |  |
|   |            |            |  |
| <b><u>MEALS ONLY (DTAV/PATCH RESIDENTS)</u></b>   |            |            |  |
| 75 MEALS + \$817.00 ON MAINECARD  | \$1,484.00 | \$2,968.00 |  |
| 50 MEALS  | \$445.00   | \$890.00   |  |
| 25 MEALS  | \$222.00   | \$444.00   |  |
| <b>STUDENT FEES</b>   |            |            |  |
| UNIFIED FEE   |            |            |  |
| 1-5 CREDIT HOURS  | \$125.00   | \$250.00   |  |
| 6-11 CREDIT HOURS   | \$381.00   | \$762.00   |  |
| 12-15 CREDIT HOURS  | \$934.00   | \$1,868.00 |  |
| 16 OR MORE CREDIT HOURS   | \$958.00   | \$1,916.00 |  |
| COMMUNICATIONS FEE  | \$15.00    | \$30.00    |  |
| STUDENT ACTIVITY FEE  | \$45.00    | \$90.00    |  |
| RECREATION CENTER FEE *   |            |            |  |
| 1-5 CREDIT HOURS  | \$76.00    | \$152.00   |  |
| 6+ CREDIT HOURS   | \$126.00   | \$252.00   |  |
| *This fee will only be assessed for credit hours taken on the University of Maine campus. |            |            |  |
| <b>OTHER FEES</b>   |            |            |  |
| Student Health Insurance Plan (SHIP) Full-year - billed in the Fall semester              |            | \$1,185.00 |  |

|  |          |          |          |
|--|----------|----------|----------|
| Student Health Insurance Plan - Spring Semester only |          | \$690.00 |          |
| LATE PAYMENT FEE                                     | \$100.00 |          |          |
| <b>NON-REFUNDABLE CHARGES/CREDITS</b>                |          |          |          |
| APPLICATION FEE                                      |          |          | \$40.00  |
| ADVANCE DEPOSIT (CREDIT)                             |          |          | \$150.00 |

BOOKS AND SUPPLIES APPROXIMATELY \$1,000.00 PER YEAR

\*\*\*TUITION AND FEES (SUBJECT TO CHANGE) BY BOARD OF TRUSTEES ACTION.\*\*\*



# Auxiliary Services

Auxiliary Services provides on-campus housing for single students in residence halls and for students with families at University Park. Auxiliary Services also operates University of Maine Dining that provides dining services for the entire campus community.

## Housing Information and Overview

The University of Maine provides on-campus housing in 17 residence halls, ranging from 38 to 300 residents in each hall. Our options include traditional undergraduate residence halls for first year students; and traditional and suite style living for upperclass students.

## Residence Halls

- have double occupancy rooms with limited single occupancy rooms available
- are smoke-free
- have \$25 per semester in laundry funds included in the room rate
- have several living/learning lifestyle options for first year-students (see [www.umaine.edu/fye](http://www.umaine.edu/fye) for more information)
- Suite Style (for upper class only)
- Graduate

## Residency Requirement

Living on campus maximizes students' opportunities for social, cultural and extra-curricular involvement and is positively linked to students' persistence toward attaining a degree. Because the University of Maine believes that residence hall living is an educational opportunity that all new students should experience, living on campus is required for all newly admitted first-year students who

- are aged 20 or younger
- do not live within easy commuting distance (30 miles)
- do not have exceptional circumstances that prevent this option

*Please note: This requirement does not apply when campus housing is not available.*

## Housing Eligibility requires that all

- undergraduate students be matriculated
- undergraduate students be enrolled for a minimum of nine University of Maine credit hours per semester

## The Room and Board License

- is signed by all students living on campus
- is non-transferable and covers the entire academic year
- is payable in two installments, one installment per semester
- requires all residents, except Doris Twitchell Allen Village/Patch Hall to have a meal plan

## Family Housing

On campus housing for students with families (spouse or partner, and/or children) may apply to live at University Park Family Housing. For more information please call

(207) 581-4854; email: [jkosnow@maine.edu](mailto:jkosnow@maine.edu) or visit our website at <http://www.umaine.edu/housing/family-housing> to download application and instructions.

## University of Maine Dining

All on-campus residents are required to have a meal plan with the exception of the apartment-style housing at DTAV and Patch. Residents can choose from several meal plan options that have been developed for great value, flexibility and convenience. UMaine Dining also offers Community Meal Plans for those off-campus students who wish to dine on campus. To view meal plans offered, please see our website at <http://www.umaine.edu/dining>.

A meal plan:

- is required for all campus residents (except DTAV and Patch residents)
- is effective the entire academic year
- is payable in two installments, one installment per semester
- change is allowed during the first six (6) weeks of each academic semester

## Commuter Meal Plans

For those students living off-campus, Black Bear Dining offers several meal plans designed specifically for the commuter student. The Community Meal Plan Application can be found at or contact University of Maine Dining at (207) 581-4576 for more information.

### Black Bear Bucks

Black Bear Bucks are available to all students. Black Bear Bucks can be purchased with cash, check, Visa, MasterCard or Discover with a minimum deposit of \$5.00.

Black Bear Bucks can be used

- in all University of Maine Dining operations (receive a 5% discount and tax exempt)
- in the Bookstore
- at Cutler Health Center
- in the library for copying
- in most clusters for printing
- in the Collins Center for the Arts
- in the residence hall laundry facilities
- at MaineBound
- at participating off-campus locations in the greater Bangor area (see <http://www.umaine.edu/mainecard/>)

## Contact Information

Housing Services, Room 103 Hilltop, 5734 Hilltop, Orono, ME 04469-5734.

Phone: (207) 581-4580.

Fax: (207) 581-3663.

E-mail: [um.housing@maine.edu](mailto:um.housing@maine.edu)

# **Student Services and Facilities**

## 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.

## **Student Wellness Resource Center (formerly Alcohol and Drug Education Programs)**

Located in Room 235 of the Memorial Union and part of the Division of Student Life, the Student Wellness Resource Center provides students, the University, and the surrounding community with drug and alcohol education, resources and assessment, general health and wellness support, and a great variety of programs and events through their cadre of Peer Educators. You can contact the Student Wellness Center at (207) 581-1423 or visit them on the web at [www.umaine.edu/studentlife](http://www.umaine.edu/studentlife)

## **Bodwell Center for Service and Volunteerism**

The Bodwell Center for Service and Volunteerism is located in Room 311 of the Memorial Union. The Center is the hub for student volunteerism, service learning and much more. Center activities include: Alternative Spring Break, Black Bear Mentors, Black Bear Exchange, Maine Day, First year day of service, AmeriCorp VISTA and blood drives. Contact the Center at (207) 581-3091 [www.umaine.edu/volunteer](http://www.umaine.edu/volunteer).

## **Campus Activities and Student Engagement (CASE)**

CASE is located on the second floor of the Memorial Union and is charged with offering student social and educational programs. These programs are offered throughout the week during the academic year (movies, concerts, comedians, LATE nights, music and more). CAB, Campus Activities Board, is a student group that works closely with CASE. Contact CASE at (207) 581-1793 or visit their site: [www.umaine.edu/case/](http://www.umaine.edu/case/)

## **Campus Recreation**

Campus Recreation is located in the New Balance Student Recreation Center (NBSRC) on Hilltop Road. Campus Recreation also operates the Maine Bound Adventure Center located just northeast of the Memorial Union. Offerings include: Intramural Sports, group fitness classes, personal training, sport clubs, children's programs, and the latest in fitness equipment (treadmills, elliptical, weights, etc.) at the NBSRC Center. The indoor climbing wall is the main feature of the Maine Bound Adventure Center which also offers exciting and cutting edge outdoor recreation opportunities. Contact Campus Recreation at (207) 581-1082 or Maine Bound at (207) 581-1794 or visit their website [www.umaine.edu/campusrecreation](http://www.umaine.edu/campusrecreation).

## **Career Center**

Located on the third floor of the Memorial Union, the Career Center offers essential services for students as they prepare for their chosen career. Résumé advice; interview techniques; career fairs; and international, national and state-wide job searching are available. Special assistance and guidance are available to students going into health and legal professions. The Health and Legal Professions Advising Office is part of the Career Center and maintains information on admission requirements of selected professional schools and application forms for standardized national exams, and other useful information. For more information, visit their web site: [www.umaine.edu/healthcareers/](http://www.umaine.edu/healthcareers/). The Career Center also offers support and career advising for students considering law school upon graduation. For more information about pre-law options and services, visit the web site [www.umaine.edu/career/studentalumni/prelaw.html](http://www.umaine.edu/career/studentalumni/prelaw.html). Contact the Career Center for a consultation or simply drop in (207) 581-1359 or visit the website: [www.umaine.edu/career](http://www.umaine.edu/career).

## **Community Standards, Rights and Responsibilities (CSRR)**

The Office of Community Standards administers the Student Conduct Code through referrals to its office from around campus. The University of Maine System Student Conduct Code contributes to the intellectual, ethical, and physical development of students by assuring that all students are held to a common standard of behavior. The Code also protects the free and peaceful expression of ideas and assures the integrity of various academic processes. Through the use of educational interventions, CSRR works to help students develop their personal integrity and sense of community. For additional information call (207) 581-1409 or visit the web site at [www.umaine.edu/studentaffairs](http://www.umaine.edu/studentaffairs).

## **Commuter/Non-Traditional Student Programs (CNTSP)**

The Commuter/Non-Traditional Student Programs Office located in the Wade Leadership Center in the Memorial Union provides personal advising, support and referral services, as well as serving as the home-away-from-home for many non-residential and non-traditional students. Listings for off-campus housing are also available from CNTSP. For additional information call (207) 581-1734 or visit the web site at [www.umaine.edu/CNTSP](http://www.umaine.edu/CNTSP).

## **The Madelyn E. and Albert D. Conley Speech Language and Hearing Center**

The Madelyn E. and Albert D. Conley Speech Language 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. Judith Stickles, M.A., 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. 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 600+ clients per year in the audiology clinic. Clients are all ages and have varied needs, from preschoolers with speech/language delays to adults with intellectual disability and limited communication skills, adults with voice or fluency disorders, or individuals seeking assistance with English pronunciation. 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 in Speech-Language Pathology (CCC-SLP) through the American Speech-Language-Hearing Association. Our full-time Clinical Audiologist, Amy Engler Booth, M.A. who holds the ASHA CCC in Audiology(CCC-A), supervises graduate students in audiology practicum. Two Specialty Clinics at the Conley Speech Language and Hearing Center offer clients and families additional service options. The Stuttering Clinic and The Family-Based Treatment Clinic 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 University of Maine Counseling Center is a department in the Division of Student Life. Members of our clinical staff provide short term, confidential counseling free of charge for undergraduate students enrolled in 6 or more credits. Initial appointments during the academic year are available Monday through Thursday afternoons and students are asked to call on the morning of the day they wish to be seen to schedule an appointment. The Counseling Center is open M-F, 8:00 am to 4:30 pm and is located on the Northeast side of Cutler Health Center Building (across from Gannett Hall). The Counseling Center Outreach and Education Office at 120 Memorial Union (adjacent to the ATM machines) operates the Mind Spa, a place to learn stress management skills. To learn more about Counseling Center services please call 207-581-1392 or visit their web site: [www.umaine.edu/counseling](http://www.umaine.edu/counseling).

## **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/](http://www.umaine.edu/it/).

The IT Help Center, (17 Shibles Hall) provides walk-in, telephone and email assistance regarding the use of the FirstClass email/conferencing system, UMaineNet (residence hall network), MaineStreet UMS accounts (PeopleSoft, Wireless access, Blackboard), software applications and all operating systems. The Help Center is also an excellent resource for the detection and removal of computing viruses and malware and with disc recovery. The Help Center provides remote control and on-site support (house calls) for software configuration problems, software installations, network connectivity and UMaineNet setup. Phone (207) 581-2506, or e-mail: [help.center@umit.maine.edu](mailto:help.center@umit.maine.edu).

Public Computer Clusters - Windows and Macintosh computers are available in the Memorial Union cluster and Windows computers are available in the Fogler Library information commons. All clusters provide a wide variety of software and Internet applications, including academic-related software, Microsoft Office, FirstClass, Firefox, URSUS, and MaineStreet. Scanners and Black & White printers are available in each cluster. The Memorial Union cluster is open 24 hours a day during the academic year for student and staff use. You may access the lab after hours by swiping your Mainecard. For updated listing of software and locations, please visit the IT Support website: <http://it.umaine.edu/support>.

Collaborative Media Lab - The CML was designed to provide space specifically for high-end graphics, video and audio production for the University of Maine community. This lab contains some of the best equipment and programs needed for Multimedia, Web and Graphic Design. The lab has video conferencing available and a relaxing lounge with a 52" flat screen monitor and surround sound for viewing your work. The lab has a HP Banner z5200ps color laser jet printer, used for large format printing in color (posters and presentations). There is a render farm available for large file video rendering. Please visit the CML website at <http://it.umaine.edu/cml> or call (207) 581-4641 for more information or reservations.

UMaineNet provides students living in all UMaine residence halls with high-speed Internet connections. For information and/or assistance, phone (207) 581-2506 or email [help.center@umit.maine.edu](mailto:help.center@umit.maine.edu).

FirstClass is UMaine's communications system that provides our users with the ability to effectively communicate and share valuable resources and information via email, conferencing (public, private or courses) directories, individual and shared calendars and online chats. Users also have the ability to build their own web pages, whether personal or course related, and to share documents and files. For information and/or assistance, phone (207) 581-2506 or email: [help.center@umit.maine.edu](mailto:help.center@umit.maine.edu).

Faculty Development Center provides a wide array of services to the University of Maine community, including workshops on a variety of computer products and technologies. Schedules and registration information are posted on the following website: <http://umaine.edu/it/forms/workshops.php/>

One-on-one assistance is also offered for any of your technological needs, as well as phone/email support at 207-581-1925, [fdc@umit.maine.edu](mailto:fdc@umit.maine.edu)

Phone Service - Each residence hall room is equipped with a working telephone jack. However, students must provide their own touch-tone phone. Students living in the residence halls also have access to voice mail.

Video Services provides onsite and remote technical support for many public room based videoconference classrooms managed by IT. The campus community may contact IT for information how to schedule a facility, training and support resources. Courses and one-time events using Polycom and Tandberg systems are supported.

Engineering services are also available to consult, design and install digital video equipment systems. For more information call (207) 581-1609

Media Services, room 19 Shibles Hall - Provides audiovisual equipment (LCD & overhead projectors, monitors, TVs and video players, cameras & computers, microphones & P.A. systems, etc.) for classroom and department use on the UMaine campus. For a complete list of equipment that can be scheduled, please call (207) 581-2500. Media Services also provides support for the high-tech classrooms such as those in the Donald P. Corbett Business Building.

## **Disability Support Services for Students**

The office of Disability Support Services facilitates the education of students with physical, emotional or learning disabilities. DSS provides a point of coordination for accommodations and special services students with disabilities 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. Some of the services provided or coordinated for students with disabilities include special orientation to campus, alternative format textbooks, note takers, classroom relocation, classroom accommodations, as well as personal and educational counseling. Students believed to be learning disabled without documentation can be screened through this office and referred for assessment outside of the University at their own expense. For further information please contact Disability Support Services at (207) 581-2319, (TTY (207)581-2325) or visit our website at <http://www.umaine.edu/disability>.

## **Division of Student Life**

Members of the Vice President for Student Life and Dean of Students staff serve as advocates for students, offer them counsel and advice, and help them cut through red tape. Please call here if you're not sure who to call. For additional information call (207) 581-1406 or visit the web site at [www.umaine.edu/studentlife](http://www.umaine.edu/studentlife).

## **Fraternity and Sorority Affairs**

Fraternity and Sorority Affairs assumes the advisory function for all recognized social fraternities and sororities; develops programming to enhance personal growth, health and safety, chapter management, recruitment, new member programs, leadership, scholarship, friendship and service to the University of Maine and the surrounding communities; and serves as a resource center and focal point for all Greek-related activities and events. For more information visit the website at [www.umaine.edu/greek](http://www.umaine.edu/greek) or call them at (207) 581-4183.

## **LGBT Services/Rainbow Resource Center**

LGBT Services serves as an on-campus resource for students, faculty and staff by working with the LGBT Allies Council, managing the Safe Zone Project and advising Wilde Stein, UMaine's student LGBT groups. The Rainbow Resource Center in the Memorial Union features a lending library with a collection of resource books and films available to the campus community. The Center also includes a safe and cozy space for students to read, hold meetings or relax between classes. Please call (207) 581-1439 or visit the website [www.umaine.edu/lgbt](http://www.umaine.edu/lgbt).

## **Intercollegiate Athletics**

The University of Maine is an NCAA Division I institution (football is FCS), offering 17 varsity sports. Conference memberships include America East, Colonial, and Hockey East. For information call (207) 581-1052.

## **Multicultural Student Life/Multicultural Center**

The Office of Multicultural Student Life is located on the third floor of the Memorial Union and provides programming, resources and support that empowers students, staff and faculty in the areas of multiculturalism. The office promotes inclusiveness and diversity by creating programs which facilitate race relations and celebrate culture. For more information call (207) 581-1425 or visit our web site at [www.umaine.edu/multicultural](http://www.umaine.edu/multicultural).

## **Ombudsperson**

The Ombudsperson for UMaine students is in the Vice President for Student Life's office located in Room 315 of the Memorial Union. An ombudsperson investigates disputes and mediates fair settlements, and also helps students cut through red tape. Contact the Ombudsperson at (207) 581-1406.

## **Off-campus Housing**

Off-campus housing assistance is available to all students and staff at the University through a listing of available living quarters in the Orono, Old Town, Bangor and Veazie areas. For more information call (207) 581-1734 or visit the CNTSP web site at [www.umaine.edu/cntsp](http://www.umaine.edu/cntsp).

## **Religious Life Team**

Religious programming, worship, study, and conversation are provided by more than a dozen active student organizations. Chaplains and other religious representatives are available for counseling and/or instruction. For more information call (207) 581-1423 or visit our web site at [www.umaine.edu/studentlife](http://www.umaine.edu/studentlife).

## **Residence Life**

In all 18 of the residence halls, student growth and development are promoted. Students living in the residence halls have immediate access to staff members who can help them to build relationships with other students, with faculty, and with student organizations that will contribute to their enjoyment and satisfaction with the UMaine experience. The staff that works in Residence Life is committed to promoting the on-campus experience; and to encourage students to build community, succeed academically, appreciate multiculturalism, participate in engaging programs, connect throughout the university, while maintaining their place in a safe and civil community. All first-year students live in the First Year Experience (FYE) where the enriched environment helps connect them to the academic and social life of UMaine. Please visit the website at [www.umaine.edu/reslife](http://www.umaine.edu/reslife) or call us at (207) 581-4801.

## **Office of Sexual Assault and Violence Prevention**

The Office of Sexual Assault and Violence Prevention, located on the third floor of the Memorial Union, provides education support for students, advocacy and many other resources. Please contact them for more information, or to report any incidents of sexual harassment, assault, stalking, or relationship violence. (207) 581-1406. [www.umaine.edu/OSAVP/](http://www.umaine.edu/OSAVP/)

## **Office of Student Employment**

The Office of Student Employment is located in Wingate Hall and offers services to students who want to work while they attend school. Whether a student was awarded Federal Work-Study or not, whether they want to work on campus or off, the Office of Student Employment is the place to start! To find employment, students are encouraged to visit the Office of Student Employment's online job search, located at [www.umaine.edu/studemp/](http://www.umaine.edu/studemp/). Students should contact The Office of Student Employment Monday - Friday, 10am - 4:30pm at (207) 581-1349, by email at [student.employ@umit.maine.edu](mailto:student.employ@umit.maine.edu) or visit [www.umaine.edu/studemp/](http://www.umaine.edu/studemp/) for more information.

## **Student Government, Inc.**

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 the web site at [www2.umaine.edu/StudentGovernment](http://www2.umaine.edu/StudentGovernment).

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 as well as other important information for students. The Student Handbook is available on the web at [www.umaine.edu/handbook](http://www.umaine.edu/handbook).

## **Student Health Services**

**Cutler Health Center** ([www.umaine.edu/cutler](http://www.umaine.edu/cutler))

To meet the needs of the students at the University of Maine, Cutler Health Center offers comprehensive healthcare to the University campus community. Clinical services at Cutler Health Center are provided by Norumbega Medical Specialists, Ltd, a subsidiary of Eastern Maine Medical Center. Services offered include but are not limited to: general medical care including the treatment of acute medical problems or injuries, chronic illness, immunizations, women's health issues, contraception, sexual health, fitness, nutrition, smoking cessation, skin cancer screening and many other health promotion programs including consultations performed by local specialists. Cutler Health Center also provides students with an on-site laboratory, massage therapy, and x-ray.

The clinical staff includes physicians, nurse practitioners, nurses, consultants, wellness educator, athletic trainer, radiographer, medical assistants, practice schedulers and an insurance verification representative. Cutler Health Center's practice schedulers provide assistance with access to care by scheduling appointments, coordinating services, and assisting with insurance company authorization for services.

All undergraduate students are welcome to use the health center for medical care. We also provide services to University of Maine employees and their dependents. Cutler Health Center is a primary care provider with physicians available to take care of your primary care needs. Review Cutler's website for a biography of providers to help with your primary care provider selection. Please be sure to make contact with your insurance company if you choose to change your primary care provider (PCP) to one of the Cutler Health Center's providers.

**Appointments:** We offer appointment-based care Monday - Friday, from 8:00 am to 5:00 pm. Students should arrive at the health center at least 10 to 15 minutes prior to their scheduled appointment to allow adequate time for the check-in process to be completed. An appointment can be requested by calling 207-581-4000. Students are required to register for each appointment at Cutler by providing an up-to-date mailing address, insurance information and emergency contact information.

**Walk-in Care:** Cutler Health Center has walk-in care hours from 10:00 am to 3:00 pm Monday through Friday for acute injuries and illness. Walk-in care services are provided based on the order you arrive. You can monitor the daily wait time of the walk-in care services by downloading the Campus SideKick mobile app for both Apple and Android devices at <http://umaine.edu/auxservices/app/>

**Online Appointment Request:** Although you can always call to make an appointment, another effective way to request an appointment is through our online service, myCutler Provider Online. Our professional staff continually monitors this service to effectively meet your healthcare requests. Appointment requests are processed prior to office opening in the morning. You may complete a web visit any time of the day or night and we will provide you with recommendations or an appointment on the same day or a day in the near future depending on your web visit. Visit our website [www.umaine.edu/cutler](http://www.umaine.edu/cutler) or contact our office for additional information or to enroll with myCutler Provider Online.

**Appointment Cancellation Policy:** (Notify Us in Advance). Students who make an appointment and cannot keep the allotted appointment time have the responsibility to call the Cutler Health Center appointment line at 207-581-4000 or send a secure message via myCutler Provider Online to our office to cancel or reschedule their appointment in advance, 24 hours prior to the scheduled appointment time.

**Radiology and Laboratory services:** Cutler Health Center accepts orders from all Eastern Maine Medical Center affiliated hospitals and physician practices. The order must be from an Eastern Maine Medical Center provider. Orders must provide the diagnosis and specify the phone number and office address of the physician ordering the tests.

**Specialty Clinics:** The specialty clinic provides campus access to a wide array of professional healthcare services. Orthopedic and podiatry consultations are offered by local physicians for easy student access and convenience. Massage therapy is available during the week for students to ease the muscle tension associated with a busy academic schedule.

**Women's Health Services:** Women's Health Services include annual exams, emergency contraception counseling, screening and treatment for sexually transmitted diseases and infections, pregnancy testing, pregnancy options counseling and referral, breast exams and self-breast exam education, birth control provisions, as well as assessment and treatment of urinary tract infections. For consultation, follow-up, and referral for a variety of women's concerns including PMS, menopause, colposcopy, biopsy for abnormal pap evaluation call 207-581-4000.



Emergency Services: In an EMERGENCY or you require emergency pre-hospital care; please dial 911 from any phone. The University of Maine operates a state licensed volunteer ambulance service U.V.A.C. (University Volunteer Ambulance Corps). This ambulance service responds to all campus locations and operates mutually with surrounding community emergency services.

Non- Emergency Transportation Support: If it is determined you need to go to a hospital but it is not an emergency, Cutler Health Center provides "free" taxi transport to and from the hospital, urgent care center, specialist referrals and pharmacies; 7 days a week/24 hours a day (see After Hours Services). Contact 581-4000 for more information.

After Hours Service: A health care provider is available 24 hours a day 7 days a week. Coverage varies for each break so please check the website for details. The medical answering service is available to coordinate taxi transportation to and from the hospital, urgent care center, specialist referrals and pharmacies 7 days a week/24 hours a day. Calling 207-581-4000 when the Health Center is closed activates the service. There is no charge for the taxi service. The costs of all hospital, emergency room, medication, radiology, laboratory, non-health-center physician, and/or other services are the responsibility of the student.

## Student Organizations and Leadership Development (SOLD)

Student Organizations and Leader Development, located in the Memorial Union, is dedicated to assisting student organizations, student leaders and organization advisors to optimize their full potential by providing resources, education and consulting assistance. The goal is to help the 200+ student organizations, their members and advisors carry out their purpose in adding exciting, fulfilling and enriching opportunities and experiences for UMaine students and the campus community. The Wade Leadership Center is also located in the Memorial Union. This is where many student organizations congregate. For more information about this office or student organizations, please call (207) 581-4183 or visit the web site at [www.umaine.edu/sold](http://www.umaine.edu/sold).

## Student Publications and Media

The award-winning student newspaper since 1875, **The Maine Campus**, is printed once/week throughout the academic school year but is updated regularly on line. 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.maine-campus.com](http://www.maine-campus.com).

**The Open Field** is the University of Maine's annual undergraduate literary magazine. It publishes fiction, non-fiction, poetry, and artwork by University students. For further information contact the *Review* at 302 Neville Hall, by email at [OpenField@umit.maine.edu](mailto:OpenField@umit.maine.edu)

**Stolen Island Review** is an annual literary magazine edited and published by graduate students in the Department of English. The Review includes a wide variety of work, including poetry and fiction by the graduate community, interviews with nationally recognized writers, photography, and visual art. Writers from outside the university also contribute.

**WMEB (91.9 FM)** is an independently student-run, non-profit radio station at UMaine. WMEB's variety of music captures the essence of their DJ's who spin their favorite unique beats. In addition, WMEB provides updates on local news, talk shows, interviews, and live music performances. The station is located on the ground floor of the Memorial Union.

## The Tutor Program

For complete information about the Tutor Program, contact The Tutor Program, 104 Dunn Hall, (207) 581-2351 or see College Success Programs <http://www.umaine.edu/tutorprogram/>

## 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, clothing, and other merchandise and services. For more information call (207) 581-1700 or e-mail us at [UMBook@maine.edu](mailto:UMBook@maine.edu) or check our website at [www.bookstore.umaine.edu](http://www.bookstore.umaine.edu).

## **University of Maine Police Department (UMPD)**

The UMPD is the certified police department on the UMaine campus. With officers trained especially to deal with issues related to today's college students, the University of Maine Police Department fully embraces the community policing model. Recently certified by IACLEA (International Association of College Law Enforcement Association), UMPD provides a 24-hr/day, 365 day presence on the UMaine campus. For more information about UMPD, contact their non-emergency number (207) 581-4040 or visit their web site: [www.umaine.edu/police/](http://www.umaine.edu/police/).

## **Veterans Education and Transition Services (VETS)/Veterans Center**

Veterans Education and Transition Services is part of the Division of Student Life and located on the first floor of the Memorial Union. The center provides information and guidance to veterans and their families, certifies students to receive benefits, and supports the transition from being in the military to being on campus. Call them at (207) 581-1316 or visit their site: [www.umaine.edu/veterans](http://www.umaine.edu/veterans).

## **The Writing Center**

The Writing Center in 402 Neville Hall is staffed by trained peer tutors who provide feedback on written work for all University of Maine students, faculty and staff. For more information, go to: <http://www.umaine.edu/wcenter/>

# Facilities and Centers

## 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 University Libraries

The Raymond H. Fogler Library, Maine's largest research library, contains more than 1.4 million print volumes, 2.3 million microforms, over 1,700 manuscript collections, and access to more than 557,000 e-books, 98,000 online serials, and 420 online databases. Fogler Library is the regional depository for federal government publications and provides access to approximately 2.39 million U.S. Federal, Maine State and Canadian federal and provincial documents. It is also the Science, Technology and Business Research Library for the State of Maine and serves to meet the needs of the citizens of the state of Maine in these areas. The Darling Marine Center Library in Walpole, Maine has a collection of more than 18,000 volumes focused on marine studies.

Through URSUS, the online union catalog of the University of Maine System Libraries and other participating libraries - the Maine State Library, the Maine State Law and Legislative Reference Library, and the Bangor Public Library - faculty and students have access to more than two million volumes. URSUS indexes the majority of the print and non-print materials for the libraries, including books, serials, microforms, sound recordings, maps, government documents, and other audiovisual formats. In addition to a bibliographic description of each item, URSUS provides location and status information. Fogler Library also participates in the MaineCat catalog, a statewide catalog that includes URSUS along with most of the other library collections in the state.

Fogler Library provides access to electronic resources available to the university community. The electronic resources include indexes, databases, electronic reserves, electronic journals, electronic books, web sites, and other material selected or created by librarians. The library also provides online reference service through Ask-a-Librarian at: [library.umaine.edu/refchat.htm](http://library.umaine.edu/refchat.htm) and also allows patrons to view their own record and renew their books through URSUS at: <https://ursus.maine.edu/patroninfo/>

The Reference Services Department is the contact point for general reference assistance. The Department provides research assistance, database searching, and conducts instruction in the sciences, social sciences, humanities, business, and education. Individual research assistance is available by appointment. The Department is also the service point for Federal and Canadian documents and provides access to Maine's only Patent and Trademark Depository Library.

The Special Collections Department contains an extensive collection of published bibliographical, historical, and descriptive works on Maine, as well as literary titles by its authors. These books, pamphlets, and state documents provide extensive important insights into Maine cities, towns, counties, people, and institutions. A substantial body of original source materials complements them. The department also houses rare books and university publications and records. Since 1998 it has been the home of the William S. Cohen Papers.

Students and faculty may borrow books from any of the UM System campus libraries using the online requestor function in URSUS, and through MaineCat, which allows online borrowing among the member libraries. Other materials may be requested from Fogler's Interlibrary Loan Department, which provides desktop delivery for many requests.

Additional information about materials and services can be found at the Fogler Library web site: <http://library.umaine.edu>. Please use the web site to access URSUS, the online indexes and databases, electronic resources, and other collections. The web site also gives detailed information on the library departments, collections, services, and contacts. The general telephone number for the library is 207-581-1666 and the number for hours is 581-1664.

## University of Maine Museum of Art

The University of Maine Museum of Art, located at 40 Harlow Street in Downtown Bangor, has four galleries which feature changing exhibitions (new shows every three months) of primarily modern and contemporary art, as well as frequent rotations of the Museum's Permanent Collection. The Museum Collection consists of over 3,600 works of art that encompass an array of visual art including painting, photography, and prints created since 1910. Highlights include works by Marc Chagall, Childe Hassam, Edward Hopper, Käthe Kollwitz, Ralph Blakelock, George Inness, Mary Cassatt, Pablo Picasso, and Diego Rivera. The Museum Collection also celebrates the long heritage of Maine art and includes examples by artists with deep connections to the state such as Berenice Abbott, Marsden Hartley, Winslow Homer, John Marin, Carl Sprinchorn, Bernard Langlais and Andrew Wyeth. The Robert Venn Carr '38 Collection is comprised of over 300 pieces and includes works on paper by many contemporary masters including Max Beckmann, Jennifer Bartlett, Jim Dine, Helen Frankenthaler, Andy Warhol, Roy Lichtenstein, Elizabeth Murray, and Robert Rauschenberg.

### **The Department of Art Gallery**

The Department of Art Gallery, on campus in Lord Hall, displays traveling exhibits as well as work by UMaine students and members of the faculty.

### **The Hudson Museum**

The Hudson Museum is located in the Collins Center for the Arts on the UMaine campus. The Hudson Museum celebrates a world of culture and cultures of the world. The Museum's holdings feature an extraordinary collection of Pre-Columbian artifacts ranging from Olmec to Aztec - The William P. Palmer III Collection, Native American holdings from Maine, the Southwest, Northwest Coast, Arctic, and Plains, as well as Collections from Africa, Oceania and Asia. The new Museum features three galleries: the Merritt Gallery for temporary exhibits, a World Cultures Gallery and a Maine Indian Gallery, as well as the Minsky Culture Lab.

The Museum offers guided tours and gallery programs, lectures, workshops and an annual Maine Indian Basketmakers Sale and Demonstration. It also offers staff assistance for directed research projects and internships. For further information, please call 581-1901 or visit us on the web at [www.umaine.edu/hudsonmuseum](http://www.umaine.edu/hudsonmuseum).

### **University of Maine Hutchinson Center**

The Hutchinson Center, located in Belfast, one hour south of the University of Maine's Orono campus, provides educational opportunities including access to courses that meet UMaine general education requirements, bachelor's degrees and graduate degrees. Credit and non-credit courses are delivered live, online or via videoconferencing technology. A state-of-the-art telecommunications facility, with high tech biology and chemistry labs, art studio, and air-conditioned classrooms, the Hutchinson Center also hosts many community conferences and meetings. For future information: The Hutchinson Center, 80 Belmont Avenue, Belfast, ME 04915, (207)338-8000/1-800-753-9044, Fax: (207)338-8013 or on the web at <http://www.hutchinsoncenter.umaine.edu>

### **Page Farm and Home Museum**

The Page Farm and Home Museum documents the history of rural Maine from 1865 to 1940 through a collection of art and artifacts from that period. The main museum building itself is a part of Maine agricultural history. The large, post-and-beam barn is the last of the original agricultural buildings actually pre-dating the founding of the University of Maine by more than thirty years. Careful renovations display the collection over its three floors while preserving much of the building's original character. The site of the Museum includes an historic one-room schoolhouse, a carriage house, blacksmith shop and two heirloom gardens. The Museum is open Tuesday through Saturday, 9-4. FMI: call 581-4100 or visit us on the web: <http://www.umaine.edu/pagefarm/>

### **Collins Center for the Arts**

As the cultural centerpiece of Northern, Eastern, and Central Maine, the Collins Center for the Arts (CCA) is an invaluable resource for the University of Maine. Now in its second quarter-century, the Center continues to present world-class performances in a wide variety of art forms and cultures, appealing to diverse interests and age groups. Educational outreach and family programming add to the cultural offerings. The Met Opera Live in HD and the latest movies' showings at "Kickin' Flicks" add to the richness of student life on campus. The Center, in partnership with other campus departments, also serves the campus

community as the choice for academic ceremonies, public meetings, receptions and seminars, and recruitment activities for prospective and new students. Annually, over 100,000 people visit the CCA, including the 30,000 who visit the Hudson Museum.

### **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 several Collins Center for the Arts performances. Various dance and theatre productions are also presented. A recording studio and moveable stage lighting are part of the Minsky Hall facility.

### **Darling Marine Center**

The Darling Marine Center is the marine laboratory and field station of the University of Maine. Located in Walpole, on the shore of the pristine Damariscotta River Estuary, just 100 miles south of the Orono campus, the DMC is a full-service field station with diverse marine habitats in the immediate area. The 170-acre facility has over one mile of waterfront, two flowing seawater laboratories for culturing marine organisms, an aquaculture lease site, and analytical laboratories with a wide variety of state-of-the-art instrumentation, as well as a fleet of coastal research vessels, oceanographic sampling gear, SCUBA support, classrooms, and a marine library. Housing, meal service and meeting space are available for researchers, class field trips, or scientific and educational conferences.

The DMC is closely associated with UMaine's School of Marine Sciences. Together they offer many great opportunities for students to study and research the marine realm. In the unique Semester-by-the-Sea (SBS) program, undergraduate marine science majors spend a semester in residence at the DMC exploring the organisms, habitats and maritime history of the Gulf of Maine in experiential, field-oriented classes. Internships and capstone opportunities provide research experiences for undergraduates during the summer months. Intensive hands-on undergraduate and graduate level field courses are also offered at the DMC through UMaine's Summer University.

### **Emera Astronomy Center**

The new Maynard F. Jordan Planetarium and Observatory in the Emera Astronomy Center on Rangeley Road opened in 2014 as Maine's largest and most advanced astronomy facilities of their kind. They were built by the generous contributions of private donors. Intended for the use of students, researchers, and the public they offer programs throughout the year and are a resource of the Department of Physics and Astronomy. Even on cloudy days, audiences in the Planetarium can enjoy a view of the stars and journeys of adventure through space and to the limits of the imagination. Public showings (free to UMaine students) are offered on weekends and private star shows can be arranged for school classes, private groups, and families.

The Jordan Observatory, a small, domed building behind the Emera Astronomy Center houses a state-of-the-art, remote-controlled, 20" reflector telescope system and several smaller instruments that students can use to learn about astronomy, conduct research, and enjoy the wonders of the heavens. Public observing nights are staffed by volunteer and student staff, typically on Friday and Saturday. Interested visitors can call in advance to check on schedule and weather conditions for the evening. Astronomy students use the facility for studies on weeknights, and student volunteers operate it on weekends for the general public.

For more information visit the Emera Astronomy Center web site: <http://astro.umaine.edu/observatory/>

### **Canadian-American Center**

Founded in 1967, the Canadian-American Center is one of the leading institutes for studying Canada in the United States. Designated a National Resource Center on Canada by the U.S. Department of Education in 1979, the Canadian-American 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 research in the humanities, social sciences, natural sciences, and professions; and directs outreach programs to state, regional, and national audiences which include Canada Week, summer teachers institutes, and international conferences.

The Canadian-American Center coordinates an extensive program of undergraduate and graduate education leading to the Minor in Canadian Studies, Major in International Affairs with a concentration in Canadian Studies, Master of Arts in History with a concentration in Canadian History, Master of Arts with a concentration in North American French Studies, and Doctor of

Philosophy in History with a concentration in Canadian History. The Canadian-American Center is located at 154 College Avenue. [www.umaine.edu/canam](http://www.umaine.edu/canam)

### **Maine Folklife Center (MFC)**

The Maine Folklife Center (MFC) founded by folklorist Edward D. "Sandy" Ives, was organized in 1992 from the Northeast Archives of Folklore and Oral History and the Northeast Folklore Society both founded by Ives in 1958. The Center's mission is to enhance our understanding of the folklife, folklore, and history of Maine and Atlantic Canada, encourage appreciation of the diverse cultures and heritage of the region, thereby strengthening and enriching our communities. To fulfill this mission the Center collects—primarily through the use of recorded interviews—preserves, studies, and disseminates information about the region's history and traditional cultures. MFC houses the nationally distinguished Northeast Archives of Folklore and Oral History. This fully digitized collection of several thousand audio 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 semiannual newsletter, *Maine Folklife*. The Maine Folklife Center is located in South Stevens Hall, 581-1891. More information may be found on our website: [www.umaine.edu/folklife](http://www.umaine.edu/folklife).

### **Center for Community Inclusion and Disability Studies**

The Center for Community Inclusion and Disability Studies (CCIDS) is an interdisciplinary research unit of the University of Maine. The work of CCIDS is guided by the principles of universal design/access, inclusion, diversity, and social justice. CCIDS faculty and staff representing diverse disciplines, engage in a broad range of initiatives that enhance the quality of life for individuals with developmental and other disabilities. The CCIDS offers interdisciplinary undergraduate and graduate study, and supports the conduct of research, evaluation, and policy analysis in the areas of education and early intervention, child care, health, employment, housing, and other aspects of community living for individuals with disabilities and their families. As Maine's federally designated University Center for Excellence in Developmental Disabilities (UCEDD), CCIDS is a member of the Association of University Centers on Disability and collaborates with other universities and research centers throughout the country and internationally to address disability-related research, practice, and public policy. Graduate and undergraduate students from any discipline may become involved in the Center's activities through coursework, independent studies, projects, and research. For additional information, please contact the Center for Community Inclusion and Disability Studies, 234 Corbett Hall, Phone (V/TTY) 207/581-1084 or 800/203-6957, or website: [www.ccids.umaine.edu](http://www.ccids.umaine.edu).

### **Women's Resource Center**

The Women's Resource Center (WRC) promotes and maintains a close relationship between the women on the University of Maine campus and women in the larger Maine community. Located at 102 Fernald Hall, the WRC works with women of all ages and offers mentoring opportunities with women activists; organizes initiatives to support economic equity for women including support for women in underrepresented career fields; gender equity programs for college students, staff, pre-college girls and educators; and organizes education and action to support reproductive rights. Leadership, skill development and research opportunities are available to undergraduate and graduate students through the WRC. The Center serves as a resource for individuals and organizations, offering information and referrals for women's programs and services, on and off campus in order to create a broader understanding of the diverse experiences of all women. The Center provides an accessible meeting space for small groups, collaboration with the Student Women's Association, and information about events of interest to women. For more information: [www.wrc.umaine.edu/](http://www.wrc.umaine.edu/) or call (207) 581-1508.

# Abbreviations

## Course Prefixes

AED - Art Education  
ANT - Anthropology  
ARA - Arabic  
ARH - Art History  
ARP - Academic Recovery Program  
ART - Art  
AST - Astronomy  
AVS - Animal and Veterinary Sciences  
BIO - Biological Sciences  
BLE - Biological Engineering  
BMB - Biochemistry, Microbiology and Molecular Biology  
BMS - Biomedical Sciences  
BUA - Business Administration  
CAN - Canadian Studies  
CEC - Education-Counseling  
CET - Civil Engineering Technology  
CHB - Chemical and Biological Engineering  
CHE - Chemical Engineering  
CHF - Child Development and Family Relations  
CHI - Chinese  
CHY - Chemistry  
CIE - Civil and Environmental Engineering  
CLA - Classics  
CMJ - Communication and Journalism  
COS - Computer Science  
CSD - Communication Sciences and Disorders  
CSP - College Success Program  
DAN - Dance  
DIG - Digital Curation  
DIS - Disability Studies  
EAD - Education-Administration  
ECE - Electrical and Computer Engineering  
ECO - Economics  
ECP - Engineering Communication Project  
EDA - Education-Measurement and Testing  
EDB - Education-Basic Professional  
EDC - Education-Curriculum  
EDG/EDU - Education-General  
EDH - Education-History and Philosophy  
EDM - Education Methods  
EDS - Education-Research  
EDT - Education-Telecommunications  
EDU - Education  
EDW - Education-Workshops  
EEL - Education-Early Literacy  
EES - Ecology and Environmental Science  
EET - Electrical Engineering Technology  
EGS - Education-Gender Studies  
EHD - Education-Human Development  
ELL - Education-Language Learning  
ELS - English Language Skills  
EMA - Education-Mathematics  
EML - Education-Middle Level  
ENG - English  
EPT - Education-Psychology  
EPY - Educational Psychology

ERL - Education-Literacy  
ERR - Education-Reading Recovery  
ERS - Earth Sciences  
ESC - Education-Science  
ESS - Education-Social Studies  
FAS - Franco American Studies  
FES - Forest Ecosystem Science  
FND - Foundations Seminar  
FRE - French  
FSC - Forest Operations Science  
FSN - Food Science and Nutrition  
FTY - Forestry  
FYS - First-Year Seminar  
GEE - General Engineering  
GEL - General Transfer Courses  
GEO - Geography  
GER - German  
GPS - Global Positioning Systems  
GRD - Graduate School  
GRE - Greek  
GRN - Gerontology  
GRR - Graduate Readings  
HBR - Hebrew  
HED - Education-Higher Education  
HON - Honors  
HTY - History  
HUD - Human Development  
ICD - Innovative Communication Design  
IDS- Interdisciplinary Studies  
IEI - Intensive English Institute  
IEN - Integrated Engineering  
IMD - Intermedia  
INA - International Affairs  
IND - Independent Study  
INT - Interdisciplinary Studies  
INV - Innovation Engineering  
ISE - Information Systems Engineering  
JST - Judaic Studies  
KPE - Kinesiology and Physical Education  
LAS - Liberal Arts and Sciences  
LAT - Latin  
LBR - Library  
LDR - Leadership Studies  
LHC - Landscape Horticulture  
LIB - Liberal Studies  
LST - Labor Studies  
MAT - Mathematics  
MEE - Mechanical Engineering  
MES - Marine Studies  
MET - Mechanical Engineering Technology  
MLC - Modern Languages and Classics  
MSE - Museum Education  
MSL - Military Science and Leadership  
MUE - Music-Education  
MUH - Music-History  
MUL - Music-Literature  
MUO - Music-Organizations and Ensembles  
MUP - Music-Performance Techniques  
MUS - Music  
MUY - Music-Theory  
NAS - Native American Studies  
NAV - Naval Science



NFA - Natural Sciences, Forestry and Agriculture  
NMD - New Media  
NUR - Nursing  
ONE - Onward-English  
ONM - Onward-Mathematics  
ONO - Onward-Orientation  
ONR - Onward-Reading  
ONS - Onward-Science  
PAA - Public Administration  
PAX - Peace Studies  
PHI - Philosophy  
PHY - Physics  
POS - Political Science  
PPA - Pulp and Paper Technology  
PRT - Parks, Recreation and Tourism  
PSE - Plant, Soil and Environmental Science  
PSY - Psychology  
QUS - Quaternary Studies  
REP - Resource Economics and Policy  
RUS - Russian  
SAR - Students at Risk  
SED - Education-Special Education  
SEI - Special Education-Early Intervention  
SFR - School of Forest Resources  
SIE - Spatial Information Engineering  
SMS - Marine Sciences  
SMT - Science and Mathematics  
SOC - Sociology  
SPA - Spanish  
SPI - School of Policy and International Affairs  
STS - Statistics  
STT - Education-Student Teaching  
SVT - Surveying Engineering Technology  
SWK - Social Work  
THE - Theatre  
TME - Technical Mathematics for Engineering  
TSO - Technology and Society  
UGR - Center for Undergraduate Research  
UST - University Studies  
VOX - Critical Language  
WGS - Women's, Gender, Sexuality Studies  
WLE - Wildlife Ecology  
WSC - Wood Science and Technology

#### College Abbreviations

BPPH - College of Business, Public Policy and Health  
EDHD - College of Education and Human Development  
EGR - College of Engineering  
LAS - College of Liberal Arts and Sciences  
NSFA - College of Natural Sciences, Forestry and Agriculture  
DLL - Division of Lifelong Learning

#### Department and Discipline Abbreviations

AVS - Animal and Veterinary Sciences  
ANT - Anthropology  
ART - Art

BLS - Black Studies  
BMB - Biochemistry, Microbiology and Molecular Biology  
CAN - Canadian Studies  
CHB - Chemical and Biological Engineering  
CHY - Chemistry  
CIE - Civil and Environmental Engineering  
CMJ - Communication and Journalism  
COS - Computer Science  
CSD - Communication Sciences and Disorders  
DAN - Dance  
DIS - Disability Studies  
ECE - Electrical and Computer Engineering  
ECO - Economics  
EDU - Education  
EES - Ecology and Environmental Sciences  
ENG - English  
ERS - Earth Sciences  
EXP - Explorations  
FAS - Franco American Studies  
FES - Forest Ecosystem Science  
FSC - Forest Operations Science  
FSN - Food Science and Human Nutrition  
GEE - General Engineering  
HDF - Human Development and Family Studies  
HON - Honors  
HTY - History  
IEI - Intensive English Institute  
INT - Interdisciplinary Studies  
KPE - Kinesiology and Physical Education  
LBR - Library  
LED - Labor Education  
MBS - Maine Business School  
MAT - Mathematics and Statistics  
MEE - Mechanical Engineering  
MLC - Modern Languages and Classics  
MSL - Military Science and Leadership  
MST - Center for Science and Mathematics Education Research  
MUS - Music  
NAS - Native American Studies  
NAV - Naval Science  
NFA - Natural Sciences, Forestry and Agriculture  
NMD - New Media  
NUR - School of Nursing  
ONW - Onward  
PAA - Public Administration  
PAX - Peace Studies  
PHI - Philosophy  
PHY - Physics and Astronomy  
POS - Political Science  
PRT - Parks, Recreation and Tourism  
PSE - Plant, Soil and Environmental Sciences  
PSY - Psychology  
REP - Resource Economics and Policy  
SBE - School of Biology and Ecology

SET - School of Engineering Technology  
SFR - School of Forest Resources  
SIE - Spatial Information Engineering  
SMS - School of Marine Science  
SOC - Sociology  
SSWK - School of Social Work  
THE - Theatre  
TSO - Technology and Society  
UST - University Studies  
WLE - Wildlife Ecology  
WGS - Women's Studies  
WSC - Wood Science and Technology

# The Maine Business School

The Maine Business School offers programs in business administration and public management. 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 Science in:*  
Business Administration

*Minors:*  
Accounting  
Business Administration  
Management  
Marketing

*Concentrations:*  
Management of Information Science  
Entrepreneurship  
International Business

Each Business Administration concentration is open only to Accounting, Finance, Management or Marketing majors. Please be aware that some of the courses in each concentration have prerequisites.

## **Management of Information Science Concentration:**

Required Courses:

- BUA 267 - Databases for Decision Making
- BUA 363 - Network Design and Applications
- BUA 468 - Electronic Business

Electives - choose a stream (programming or creative project-oriented) and select 2 courses:

Programming (choose 2 courses):

- COS 120 - Introduction to Programming I
- COS 125 - Introduction to Problem Solving Using Computer Programming
- COS 220 - Introduction to C++ Programming

**OR**

Creative Project-Oriented (choose 2 courses):

- NMD 102 - Introduction to New Media Technologies, Interaction Design and Prototyping
- NMD 104 - Design Basics for New Media
- NMD 306 - Project Design Workshop I
- NMD 342 - Interaction Design & Physical Computing
- NMD 442 - User Experience Design

## **Entrepreneurship Concentration:**

Required Courses:

- INV 180 - Create: Innovation Engineering I
- BUA 344 - Entrepreneurship and New Venture Creation
- BUA 342 - Small Business Management

Electives - (choose 2 courses):

- BUA 330 - Human Resource Management
- BUA 460 - Leadership
- ECO 254 - Small Business Economics and Management
- PSY 230 - Social Psychology
- ENG 418 - Communication for Small Business and Nonprofits

### **International Business Concentration:**

Required Courses:

- BUA 376 - International Marketing
- BUA 445 - International Management
- BUA 455 - International Finance
- POS 120 - Introduction to World Politics

Electives - Two internationally-oriented non-business elective courses

A study abroad international experience

### **NOTES:**

#### **Entrance Requirements:**

Entrance requirements for the degree programs in the Maine Business School are noted in the Admission section of this catalog. Please note that admission requirements differ among majors.

#### **Academic Advising:**

Faculty in the Maine Business School 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 Maine Business School must designate a major on the application form. Please read the appropriate section in this catalog for more information about the specific majors.

#### **Military Credit Policy:**

The Maine Business School allow a maximum of 15 military science credits which will count as free electives. No MSL classes count as Business electives.

#### **Changing Colleges:**

Students currently enrolled in another baccalaureate program at the University of Maine may change their enrollment to the Maine Business School 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 Maine Business School requires 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 Maine Business School the required grade point average is 2.0. 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. The following transfer policies apply:

1. Transfer credit is granted for business courses taken at institutions accredited by AACSB.
2. For business courses taken at institutions not accredited by AACSB, transfer credit is not granted automatically. Contact the Associate Dean's office or the MBS undergraduate office for information.

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

**Course Fees:**

In an effort to continue to improve the quality of the MBS in an era of steady or declining state support, additional funding is important. Growth in student numbers has resulted in a need for more faculty, changes in staffing, and other modifications to the MBS. To continue to increase the quality of the MBS, a course fee of \$100.00 will be assessed to all students in business courses.

The revenue generated will be used to continue to upgrade the computer lab, to use experienced adjunct faculty in targeted areas, allowing full-time faculty to teach more upper level courses, to support students participating in business competitions in the United States and Canada, and for other items that will directly benefit you and other students. A portion of the fee revenue will be expended based on the recommendations of the Dean's Student Advisory Board. This will insure that we are focusing on those items that contribute to a positive learning environment for our students.

**Program Contacts***Business Administration*

Stephanie Welcomer  
Maine Business School  
211 Donald P. Corbett Business Building  
(207) 581-1968  
welcomer@maine.edu

**Major****Business Administration in Accounting****OVERVIEW OF DEGREE REQUIREMENTS**

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** A C- or better is required in all business core classes and those classes may be repeated only once. When a student earns a grade less than a C- in a core business course, they must retake that class at UMaine.

**Other GPA requirements to graduate:** Must earn a minimum overall gpa of 2.0 in all BUA and ECO classes. Must earn at least 70% of the total credit hours in core business classes, as well as the majority of the courses in the major at UMaine

**Required Course(s) for fulfilling Capstone Experience:** BUA 449

**Contact Information:** Stephanie Welcomer, Associate Dean, 211 DP Corbett, (207)581-1968

The Accounting major prepares students to have skills in the organization and presentation of financial information to corporate stakeholders and internal financial and managerial information to business managers. Accounting majors' career paths include financial reporting, taxation, internal and external auditing and business consulting.

**School/Departmental Requirements:**

To earn a B.S. in Accounting at least 70% of the total credits earned in business core classes, as well as the majority of the specialized courses in the major (i.e., 4 out of 6 in accounting) must be taken at the University of Maine. Business and economics coursework must be completed with a 2.0 ("C") cumulative average.

A C- or better is required in all business core classes and those classes may be repeated only once.

Students wishing to transfer from other institutions or from other programs within UM must have a cumulative GPA of 2.0. In addition to University-wide policies for transfer of credit, MBS, as an institution accredited by AACSB International, evaluates transfer credit according to AACSB standards. Rarely do business courses from a non-AACSB accredited institution transfer to the MBS other than as electives. Thus the transfer student may be required to take more than 120 credit hours to graduate. Such students are strongly encouraged to check with MBS well in advance about how business courses will transfer.

First year accounting students should take BUA 101, BUA 201, BUA 202 and BUA 235. Sophomores (24 or more degree hours) may take BUA 325, BUA 220, BUA 301, BUA 302 and BUA 270. Juniors (54 or more degree hours) may take any other 300- or 400-level business course for which prerequisites have been met unless the course specifies "Senior Standing". Class standing requirements are never waived.

**The Business Program for Accounting majors has three components:**

1. The General Foundation (54 credits). Throughout the program students acquire a broad education in the liberal arts and sciences. Through courses in English, communications, international studies, mathematics, computer science, economics and psychology, as well as electives, students build a strong foundation for lifelong learning. Within this component, the student will satisfy the University's general education requirements.
2. The Business Core (33 credits). The core business courses provide an understanding of the functional areas common to most businesses: accounting, finance, law, marketing, management, management information systems, production and operations, international business and strategy.
3. The Major Fields (15-18 credits). Students acquire advanced knowledge of a major field (accounting, finance, management, or marketing) by taking five courses (six in accounting) beyond the introductory level in a chosen major. A concentration Concentrations in International Business, Management of Information Systems, and Entrepreneurship can be elected in addition to a major.

Note: The remaining 15-18 credits needed to qualify for graduation can be filled with any course offered at the University.

**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 major in accounting and then complete the UMaine MBA. Students should strongly consider an internship in accounting sometime during their program.

## General Foundation - 54 credits

## I. Arts and Sciences Core (37 credits)

- CMJ 103 - Fundamentals of Public Communication Credits: 3  
Note: CMJ 103 will not count towards this major if taken online
- COS 211 - Principles of Data Processing Credits: 3  
**or**
- COS 213 - Advanced Excel Spreadsheet Design Credits: 3
- ECO 120 - Principles of Microeconomics Credits: 3
- ECO 121 - Principles of Macroeconomics Credits: 3
- ENG 101 - College Composition Credits: 3
- ENG 317 - Business and Technical Writing Credits: 3
- Any other English Class Credits: 3
- MAT 115 - Applied Mathematics for Business and Economics Credits: 3  
**or**
- MAT 126 - Calculus I Credits: 4
- STS 215 - Introduction to Statistics for Business and Economics Credits: 3  
**or**
- STS 232 - Principles of Statistical Inference Credits: 3
- PSY 100 - General Psychology Credits: 3
- Lab Science (General Education) Credits: 4
- Lab or Applied Science (General Education) Credits: 3

## II. Outside Electives (17 credits)

These 17 credits may be chosen from the offerings of the College of Liberal Arts and Sciences from the School of Economics, or any non-business course that satisfies a general education requirement. Students should use these credits to complete the University's general education requirements that are not satisfied by the courses above (3 credits each in Western Cultural Tradition, Population and the Environment, Artistic and Creative Expression, and Cultural Diversity and International Perspectives) as well as to complete a minor or pursue an area of interest.

## Core Requirements in Business (33 Credits)

A C- or better is required in each. These courses may only be repeated once.

- BUA 101 - Introduction to Business Credits: 3



- BUA 201 - Principles of Financial Accounting Credits: 3
- BUA 202 - Principles of Managerial Accounting Credits: 3
- BUA 220 - The Legal Environment of Business Credits: 3
- BUA 235 - Information Systems and Technology for Business Credits: 3
- BUA 325 - Principles of Management and Organization Credits: 3
- BUA 337 - Production and Operations Management Credits: 3
- BUA 343 - Introduction to International Business Credits: 3
- BUA 350 - Business Finance Credits: 3
- BUA 270 - Marketing Credits: 3
- BUA 449 - Strategic Management Credits: 3

## Accounting (18 Credits)

- BUA 301 - Intermediate Accounting I Credits: 3
- BUA 302 - Intermediate Accounting II Credits: 3
- BUA 305 - Cost Accounting Credits: 3
- BUA 310 - Auditing Credits: 3
- BUA 312 - Federal Taxation of Individuals Credits: 3

## Plus either:

- BUA 406 - Advanced Managerial Accounting Credits: 3
- or
- BUA 409 - Accounting for Governmental and Not-For-Profit Entities Credits: 3

## Free Electives (15 credits)

Any courses offered at the University of Maine will fill these electives.

## Required Courses in Suggested Sequence for a B.S. in Business Administration in Accounting

Although the following is a suggested curriculum, upper-level Accounting classes are offered only once a year. Students should adhere to the sequence of accounting classes.

Note: Students may take BUA 301 and BUA 302 in their third year if BUA 201 and BUA 202 have been completed successfully. Students anticipating an Accounting internship in their senior year should plan their program carefully to free one semester for the full work.

## First Year - First Semester (15 credits)

- BUA 235 - Information Systems and Technology for Business Credits: 3
- ECO 120 - Principles of Microeconomics Credits: 3
- ENG 101 - College Composition Credits: 3
- PSY 100 - General Psychology Credits: 3
- Elective (General Education) Credits: 3

### First Year - Second Semester (15 credits)

- CMJ 103 - Fundamentals of Public Communication Credits: 3
- ECO 121 - Principles of Macroeconomics Credits: 3
- MAT 115 - Applied Mathematics for Business and Economics Credits: 3
- **or**
- MAT 126 - Calculus I Credits: 4  
(math placement test MUST be taken)
- Elective (General Education)
- Elective (General Education)

### Second Year - First Semester (15-16 credits)

Students should note that several courses satisfy more than one general education requirement allowing for a wider selection of electives later. Accounting students should take BUA 301 and 302 during the sophomore year.

- BUA 201 - Principles of Financial Accounting Credits: 3
- BUA 220 - The Legal Environment of Business Credits: 3
- STS 215 - Introduction to Statistics for Business and Economics Credits: 3
- **or**
- STS 232 - Principles of Statistical Inference Credits: 3
- Gen Ed: Population and Environment
- Gen Ed: Lab or Applied Science

### Second Year - Second Semester (15-16 credits)

- BUA 202 - Principles of Managerial Accounting Credits: 3
- BUA 270 - Marketing Credits: 3
- BUA 325 - Principles of Management and Organization Credits: 3
- COS 213 - Advanced Excel Spreadsheet Design Credits: 3
- Gen Ed: Lab or Applied Science
- Gen Ed: Artistic and Creative Expression

Note: the Artistic & Creative Expression and Cultural Diversity electives may be satisfied by a careful choice of an English Elective.

### Third Year - First Semester (15 credits)

- BUA 305 - Cost Accounting Credits: 3
- BUA 350 - Business Finance Credits: 3
- ENG 317 - Business and Technical Writing Credits: 3
- Six additional credits

### Third Year - Second Semester (15 credits)

- BUA 337 - Production and Operations Management Credits: 3
- BUA 343 - Introduction to International Business Credits: 3
- BUA 406 - Advanced Managerial Accounting Credits: 3
- **or**
- BUA 409 - Accounting for Governmental and Not-For-Profit Entities Credits: 3
- Six additional credits

### Fourth Year - First Semester (15 credits)

- BUA 310 - Auditing Credits: 3
- BUA 312 - Federal Taxation of Individuals Credits: 3
- BUA 449 - Strategic Management Credits: 3
- Six additional credits

### Fourth Year - Second Semester (13-18 credits)

- BUA 396 - Field Experience/Internship Credits: 1-6 (recommended)
- 12 additional credits

## **Business Administration in Finance**

# **OVERVIEW OF DEGREE REQUIREMENTS**

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** Must earn a minimum of a C- in all core business classes, with only one opportunity to repeat a class.

**Other GPA requirements to graduate:** Must earn a minimum overall GPA of 2.0 in all BUA and ECO classes. Must earn at least 70% of the total credit hours in core business classes, as well as the majority of the courses in the major at UMaine

**Required Course(s) for fulfilling Capstone Experience:** BUA 449

**Contact Information:** Stephanie Welcomer, Associate Dean, 211 DP Corbett, (207)581-1968

The Finance major prepares students to have skills in three general areas - structure and functioning of financial markets and institutions; methods of financing business operations; and security selection and portfolio management for individual and institutional investors. Common career paths for finance majors are in financial management in business, management and nonprofit organizations; commercial and investment banking; and brokerage.

#### **School/Departmental Requirements:**

To earn a B.S. in Finance at least 70% of the total credits earned in business core classes, as well as the majority of the specialized courses in the major (i.e., 3 out of 5 in finance) must be taken at the University of Maine. Business and economics coursework must be completed with a 2.0 ("C") cumulative average.

A C- or better is required in all business core classes and those classes may be repeated only once.

Students wishing to transfer from other institutions or from other programs within UM must have a cumulative GPA of 2.0. In addition to University-wide policies for transfer of credit, MBS, as an institution accredited by AACSB International, evaluates transfer credit according to AACSB standards. Rarely do business courses from a non-AACSB accredited institution transfer to the MBS other than as electives. Thus the transfer student may be required to take more than 120 credit hours to graduate. Such students are strongly encouraged to check with MBS well in advance about how business courses will transfer.

First year finance students may take BUA 101, BUA 201 and BUA 235. Sophomores (24 or more degree hours) may take BUA 201, BUA 202, BUA 267, BUA 325, and BUA 220. Juniors (54 or more degree hours) may take any other 300- or 400-level business course for which prerequisites have been met unless the course specifies "Senior Standing". Class standing requirements are never waived.

#### **The Business Program for Finance majors has three components:**

1. The General Foundation (54 credits). Throughout the program students acquire a broad education in the liberal arts and sciences. Through courses in English, communications, international studies, mathematics, computer science, economics and psychology, as well as electives, students build a strong foundation for lifelong learning. Within this component, the student will satisfy the University's general education requirements.
2. The Business Core (33 credits). The core business courses provide an understanding of the functional areas common to most businesses: accounting, finance, law, marketing, management, management information systems, production and operations, international business and strategy.
3. The Major Fields (15-18 credits). Students acquire advanced knowledge of a major field (accounting, finance, management, or marketing) by taking five courses (six in accounting) beyond the introductory level in a chosen major. Concentrations in International Business, Management of Information Systems, and Entrepreneurship can be elected in addition to a major.

Note: The remaining 15-18 credits needed to qualify for graduation can be filled with any course offered at the University.

## General Foundation (54 credits)

### I. Arts and Sciences Core (37 credits)

- CMJ 103 - Fundamentals of Public Communication Credits: 3  
Note: CMJ 103 will not count towards this major if taken online.
- COS 211 - Principles of Data Processing Credits: 3  
or

- COS 213 - Advanced Excel Spreadsheet Design Credits: 3
- ECO 120 - Principles of Microeconomics Credits: 3
- ECO 121 - Principles of Macroeconomics Credits: 3
- ENG 101 - College Composition Credits: 3
- ENG 317 - Business and Technical Writing Credits: 3
- Any other English Class Credits:3
- MAT 115 - Applied Mathematics for Business and Economics Credits: 3  
or
- MAT 126 - Calculus I Credits: 4
- STS 215 - Introduction to Statistics for Business and Economics Credits: 3  
or
- STS 232 - Principles of Statistical Inference Credits: 3
- PSY 100 - General Psychology Credits: 3
- Lab Science (General Education) Credits: 4
- Lab or Applied Science (General Education) Credits:3

## II. Outside Electives (17 Credits)

These 17 credits may be chosen from the offerings of the College of Liberal Arts and Sciences from the School of Economics, or any non-business course that satisfies a general education requirement. Students should use these credits to complete the University's general education requirements that are not satisfied by the courses above (3 credits each in Western Cultural Tradition, Population and the Environment, Artistic and Creative Expression, and Cultural Diversity and International Perspectives) as well as to complete a minor or pursue an area of interest.

## Core Requirements in Business (33 credits)

A C- or better is required in each. These courses may only be repeated once.

- BUA 101 - Introduction to Business Credits: 3
- BUA 201 - Principles of Financial Accounting Credits: 3
- BUA 202 - Principles of Managerial Accounting Credits: 3
- BUA 220 - The Legal Environment of Business Credits: 3
- BUA 235 - Information Systems and Technology for Business Credits: 3
- BUA 325 - Principles of Management and Organization Credits: 3
- BUA 337 - Production and Operations Management Credits: 3
- BUA 343 - Introduction to International Business Credits: 3
- BUA 350 - Business Finance Credits: 3
- BUA 270 - Marketing Credits: 3

- BUA 449 - Strategic Management Credits: 3

## Finance (15 Credits)

- BUA 351 - Valuation and Corporate Investment Decisions Credits: 3
- BUA 352 - Financial Institutions Credits: 3
- BUA 353 - Investment Strategy Credits: 3
- BUA 454 - Financial Derivatives Credits: 3

## Plus one of the following:

- BUA 267 - Database Management Credits: 3
- BUA 301 - Intermediate Accounting I Credits: 3
- BUA 305 - Cost Accounting Credits: 3
- BUA 455 - International Corporate Finance Credits: 3
- BUA 468 - Electronic Business Credits: 3
- ECO 339 - International Finance Credits: 3
- ECO 350 - Intermediate Microeconomic Theory Credits: 3
- ECO 366 - Applied Economic Data Analysis Credits: 3
- ECO 488 - Spreadsheet Modeling and Decision Analysis Credits: 3

## Free Electives (15 credits)

Any courses offered at the University of Maine will fill these electives

## Required Courses in Suggested Sequence for a B. S. in Business Administration in Finance

Students should be aware that upper-level Finance classes (not including BUA 350) are offered only once a year. Students are responsible for the successful completion of prerequisites to upper-level courses.

## First Year - First Semester (15 credits)

- BUA 235 - Information Systems and Technology for Business Credits: 3
- ECO 120 - Principles of Microeconomics Credits: 3
- ENG 101 - College Composition Credits: 3
- PSY 100 - General Psychology Credits: 3
- Elective (General Education) Credits: 3

## First Year - Second Semester (15 credits)

- CMJ 103 - Fundamentals of Public Communication Credits: 3
- ECO 121 - Principles of Macroeconomics Credits: 3
- MAT 115 - Applied Mathematics for Business and Economics Credits: 3
- **or**
- MAT 126 - Calculus I Credits: 4  
(math placement test MUST be taken)
- Elective (General Education)
- Elective (General Education)

## Second Year - First Semester (15-16 credits)

Students should note that several courses satisfy more than one general education requirement allowing for a wider selection of electives later.

- BUA 201 - Principles of Financial Accounting Credits: 3
- BUA 220 - The Legal Environment of Business Credits: 3
- STS 215 - Introduction to Statistics for Business and Economics Credits: 3
- **or**
- STS 232 - Principles of Statistical Inference Credits: 3
- Gen Ed: Population and Environment
- Gen Ed: Lab or Applied Science

## Second Year - Second Semester (15-16 credits)

- BUA 202 - Principles of Managerial Accounting Credits: 3
  - BUA 270 - Marketing Credits: 3
  - BUA 325 - Principles of Management and Organization Credits: 3
  - COS 213 - Advanced Excel Spreadsheet Design Credits: 3
  - Gen Ed: Lab or Applied Science
  - Gen Ed: Artistic and Creative Expression
- Note: the Artistic and Creation Expression and Cultural Diversity electives may be satisfied by a careful choice of an English elective.

## Third Year - First Semester (15 credits)

- BUA 337 - Production and Operations Management Credits: 3
- BUA 350 - Business Finance Credits: 3
- ENG 317 - Business and Technical Writing Credits: 3
- Six additional credits

## Third Year - Second Semester (15 credits)

- BUA 343 - Introduction to International Business Credits: 3
- BUA 351 - Valuation and Corporate Investment Decisions Credits: 3
- Nine additional credits

#### Fourth Year - First Semester (15 credits)

- BUA 352 - Financial Institutions Credits: 3
- BUA 353 - Investment Strategy Credits: 3
- Nine additional credits

#### Fourth Year - Second Semester (15 credits)

- BUA 449 - Strategic Management Credits: 3
- BUA 454 - Financial Derivatives Credits: 3
- Finance Elective
- 6 additional credits

## Business Administration in Management

# OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** A C- or better is required in all business core classes and those classes may be repeated only once. When a student earns a grade less than a C- in a core business course, they must retake that class at UMaine

**Other GPA requirements to graduate:** Must earn a minimum overall GPA of 2.0 in all BUA and ECO classes. Must earn at least 70% of the total credit hours in core business classes, as well as the majority of the courses in the major at UMaine

**Required Course(s) for fulfilling Capstone Experience:** BUA 449

**Contact Information:** Stephanie Welcomer, Associate Dean, 211 DP Corbett, (207)581-1968

The Management major prepares students to have skills necessary to navigate the complexities of corporate, international and small business management. The program's broad scope allows students to understand administrative and organizational principles, including decision-making, teamwork, leadership, motivation, organizational change, strategic analysis and production system analysis, as well as recruiting, training and compensating personnel. Career paths for management majors include business consulting, general management in private and nonprofit organizations, and human resource management.

**School/Departmental Requirements:**



To earn a B.S. in Management at least 70% of the total credits earned in business core classes, as well as the majority of the specialized courses in the major (i.e., 3 out of 5 in management) must be taken at the University of Maine. Business and economics coursework must be completed with a 2.0 ("C") cumulative average.

A C- or better is required in all business core classes and those classes may be repeated only once.

Students wishing to transfer from other institutions or from other programs within UM must have a cumulative GPA of 2.0. In addition to University-wide policies for transfer of credit, MBS, as an institution accredited by AACSB International, evaluates transfer credit according to AACSB standards. Rarely do business courses from a non-AACSB accredited institution transfer to the MBS other than as electives. Thus the transfer student may be required to take more than 120 credit hours to graduate. Such students are strongly encouraged to check with MBS well in advance about how business courses will transfer.

First year management students may take BUA 101 and BUA 235. Sophomores (24 or more degree hours) may take BUA 201, BUA 202, BUA 220, BUA 270, BUA 290, and BUA 325. Juniors (54 or more degree hours) may take any other 300- or 400-level business course for which prerequisites have been met unless the course specifies "Senior Standing". Class standing requirements are never waived.

**The Business Program for Management majors has three components:**

1. The General Foundation (54 credits). Throughout the program students acquire a broad education in the liberal arts and sciences. Through courses in English, communications, international studies, mathematics, computer science, economics and psychology, as well as electives, students build a strong foundation for lifelong learning. Within this component, the student will satisfy the University's general education requirements.
2. The Business Core (33 credits). The core business courses provide an understanding of the functional areas common to most businesses: accounting, finance, law, marketing, management, management information systems, production and operations, international business and strategy.
3. The Major Fields (15-18 credits). Students acquire advanced knowledge of a major field (accounting, finance, management, or marketing) by taking five courses (six in accounting) beyond the introductory level in a chosen major. Concentrations in International Business, Management of Information Systems, and Entrepreneurship can be elected in addition to a major.

Note: The remaining 15-18 credits needed to qualify for graduation can be filled with any course offered at the University.

## General Foundation - 54 credits

### I. Arts and Sciences Core (37 credits)

- CMJ 103 - Fundamentals of Public Communication Credits: 3  
Note: CMJ 103 will not count towards this major if taken online.
- COS 211 - Principles of Data Processing Credits: 3  
or
- COS 213 - Advanced Excel Spreadsheet Design Credits: 3
- ECO 120 - Principles of Microeconomics Credits: 3
- ECO 121 - Principles of Macroeconomics Credits: 3
- ENG 101 - College Composition Credits: 3

- ENG 317 - Business and Technical Writing Credits: 3
- Any other English class Credits: 3
- MAT 115 - Applied Mathematics for Business and Economics Credits: 3  
or
- MAT 126 - Calculus I Credits: 4
- STS 215 - Introduction to Statistics for Business and Economics Credits: 3  
or
- STS 232 - Principles of Statistical Inference Credits: 3
- PSY 100 - General Psychology Credits: 3
- Lab Science (General Education) Credits: 4
- Lab or Applied Science (General Education) Credits: 3

## II. Outside Electives (17 credits)

These 17 credits may be chosen from the offerings of the College of Liberal Arts and Sciences from the School of Economics, or any non-business course that satisfies a general education requirement. Students should use these credits to complete the University's general education requirements that are not satisfied by the courses above (3 credits each in Western Cultural Tradition, Population and the Environment, Artistic and Creative Expression, and Cultural Diversity and International Perspectives) as well as to complete a minor or pursue an area of interest.

## Core Requirements in Business (33 credits)

A C- or better is required in each. These courses may only be repeated once.

- BUA 101 - Introduction to Business Credits: 3
- BUA 201 - Principles of Financial Accounting Credits: 3
- BUA 202 - Principles of Managerial Accounting Credits: 3
- BUA 220 - The Legal Environment of Business Credits: 3
- BUA 235 - Information Systems and Technology for Business Credits: 3
- BUA 325 - Principles of Management and Organization Credits: 3
- BUA 337 - Production and Operations Management Credits: 3
- BUA 343 - Introduction to International Business Credits: 3
- BUA 350 - Business Finance Credits: 3
- BUA 270 - Marketing Credits: 3
- BUA 449 - Strategic Management Credits: 3

## Management (15 credits)

- BUA 326 - Organizational Behavior Credits: 3

- BUA 330 - Human Resource Management Credits: 3
- BUA 327 - Business and Society Credits: 3

Plus two from the following:

- BUA 267 - Database Management Credits: 3
- BUA 328 - Canadian/U.S. Business: A Comparison Credits: 3
- BUA 331 - Labor-Management Relations Credits: 3
- BUA 342 - Small Business Management Credits: 3
- BUA 344 - Entrepreneurship and New Venture Creation Credits: 3
- BUA 445 - International Management Credits: 3
- BUA 460 - Leadership Credits: 3

## Free Electives (18 Credits)

Any courses offered at the University of Maine will fill these electives.

## Required Courses in Suggested Sequence for a B. S. in Business Administration in Management

Note that, although the following is a suggested curriculum, students should be aware that the upper-level management classes noted above as requirements are offered only once a year. Students must take responsibility for ensuring they meet all course prerequisites. Taking BUA 325 in the sophomore year is assumed.

### First Year - First Semester (15 credits)

- ECO 120 - Principles of Microeconomics Credits: 3
- ENG 101 - College Composition Credits: 3
- PSY 100 - General Psychology Credits: 3
- BUA 235 - Information Systems and Technology for Business Credits: 3
- Elective (general education)

### First Year - Second Semester (15 credits)

- CMJ 103 - Fundamentals of Public Communication Credits: 3
- ECO 121 - Principles of Macroeconomics Credits: 3
- MAT 115 - Applied Mathematics for Business and Economics Credits: 3
- **or**
- MAT 126 - Calculus I Credits: 4  
(math placement test MUST be taken)
- Elective (general education)
- Elective (general education)

## Second Year - First Semester (15-16 credits)

Students should note that several courses satisfy more than one general education requirement allowing for a wider selection of electives later.

- BUA 201 - Principles of Financial Accounting Credits: 3
- BUA 220 - The Legal Environment of Business Credits: 3
- STS 215 - Introduction to Statistics for Business and Economics Credits: 3
- **or**
- STS 232 - Principles of Statistical Inference Credits: 3
- Gen Ed: Population and Environment
- Gen Ed: Lab or Applied Science

## Second Year - Second Semester (15-16 credits)

- BUA 202 - Principles of Managerial Accounting Credits: 3
  - BUA 270 - Marketing Credits: 3
  - BUA 325 - Principles of Management and Organization Credits: 3
  - COS 213 - Advanced Excel Spreadsheet Design Credits: 3
  - Gen Ed: Lab or Applied Science
  - Gen Ed: Artistic and Creative Expression
- Note: the Artistic and Creative Expression and Cultural Diversity Electives may be satisfied by a careful choice of an English elective.

## Third Year - First Semester (15 credits)

- BUA 326 - Organizational Behavior Credits: 3
- BUA 330 - Human Resource Management Credits: 3
- BUA 350 - Business Finance Credits: 3
- ENG 317 - Business and Technical Writing Credits: 3
- Three additional credits

## Third Year - Second Semester (9 credits)

- BUA 327 - Business and Society Credits: 3
- BUA 337 - Production and Operations Management Credits: 3
- BUA 343 - Introduction to International Business Credits: 3

## Fourth Year - First Semester (15 credits)

- Management Elective
- 12 additional credits

## Fourth Year - Second Semester (15 credits)

- BUA 449 - Strategic Management Credits: 3
- Management Elective
- Nine additional credits

## Business Administration in Marketing

# OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** A C- or better is required in all business core classes and those classes may be repeated only once. When a student earns a grade less than a C- in a core business course, they must retake that class at UMaine

**Other GPA requirements to graduate:** Must earn a minimum overall gpa of 2.0 in all BUA and ECO classes. Must earn at least 70% of the total credit hours in core business classes, as well as the majority of the courses in the major at UMaine

**Required Course(s) for fulfilling Capstone Experience:** BUA 449

**Contact Information:** Stephanie Welcomer, Associate Dean, 211 DP Corbett, (207)581-1968

The Marketing major prepares students to have skills in market assessment, marketing to particular segments, building brands, as well as teamwork, professional presentations and effective communication. Marketing majors commonly have careers in retail management, services marketing, sales, advertising, and marketing research.

### **School/Departmental Requirements:**

To earn a B.S. in Marketing at least 70% of the total credits earned in business core classes, as well as the majority of the specialized courses in the major (i.e., 3 out of 5 in marketing) must be taken at the University of Maine. Business and economics coursework must be completed with a 2.0 ("C") cumulative average.

A C- or better is required in all business core classes and those classes may be repeated only once.

Students wishing to transfer from other institutions or from other programs within UM must have a cumulative GPA of 2.0. In addition to University-wide policies for transfer of credit, MBS, as an institution accredited by AACSB International, evaluates transfer credit according to AACSB standards. Rarely do business courses from a non-AACSB accredited institution transfer to the MBS other than as electives. Thus the transfer student may be required to take more than 120 credit hours to graduate. Such students are strongly encouraged to check with MBS well in advance about how business courses will transfer.

First year marketing students may take BUA 101 and BUA 235. Sophomores (24 or more degree hours) may take BUA 201, BUA 202, BUA 220, BUA 270, and BUA 325. Juniors (54 or more degree hours) may take any other 300- or 400-level business course for which prerequisites have been met unless the course specifies "Senior Standing". Class standing requirements are never waived.

**The Business Program for Marketing majors has three components:**

1. The General Foundation (54 credits). Throughout the program students acquire a broad education in the liberal arts and sciences. Through courses in English, communications, international studies, mathematics, computer science, economics and psychology, as well as electives, students build a strong foundation for lifelong learning. Within this component, the student will satisfy the University's general education requirements.
2. The Business Core (33 credits). The core business courses provide an understanding of the functional areas common to most businesses: accounting, finance, law, marketing, management, management information systems, production and operations, international business and strategy.
3. The Major Fields (15-18 credits). Students acquire advanced knowledge of a major field (accounting, finance, management, or marketing) by taking five courses (six in accounting) beyond the introductory level in a chosen major. Concentrations in International Business, Management of Information Systems, and Entrepreneurship can be elected in addition to a major.

Note: The remaining 15-18 credits needed to qualify for graduation can be filled with any course offered at the University.

## General Foundation - 54 credits

### I. Arts and Sciences Core (37 credits)

- CMJ 103 - Fundamentals of Public Communication Credits: 3  
Note: CMJ 103 will not count towards this major if taken online.
- COS 211 - Principles of Data Processing Credits: 3  
**or**
- COS 213 - Advanced Excel Spreadsheet Design Credits: 3
- ECO 120 - Principles of Microeconomics Credits: 3
- ECO 121 - Principles of Macroeconomics Credits: 3
- ENG 101 - College Composition Credits: 3
- ENG 317 - Business and Technical Writing Credits: 3
- Any other English Class Credits: 3
- MAT 115 - Applied Mathematics for Business and Economics Credits: 3  
**or**
- MAT 126 - Calculus I Credits: 4
- STS 215 - Introduction to Statistics for Business and Economics Credits: 3  
**or**
- STS 232 - Principles of Statistical Inference Credits: 3
- PSY 100 - General Psychology Credits: 3
- Lab Science (General Education) Credits: 4

- Lab or Applied Science (General Education) Credits: 3

## II. Outside Electives (17 credits)

These 17 credits may be chosen from the offerings of the College of Liberal Arts and Sciences from the School of Economics, or any non-business course that satisfies a general education requirement. Students should use these credits to complete the University's general education requirements that are not satisfied by the courses above (3 credits each in Western Cultural Tradition, Population and the Environment, Artistic and Creative Expression, and Cultural Diversity and International Perspectives) as well as to complete a minor or pursue an area of interest.

## Core Requirements in Business (33 credits)

A C- or better is required in each. These courses may only be repeated once.

- BUA 101 - Introduction to Business Credits: 3
- BUA 201 - Principles of Financial Accounting Credits: 3
- BUA 202 - Principles of Managerial Accounting Credits: 3
- BUA 220 - The Legal Environment of Business Credits: 3
- BUA 235 - Information Systems and Technology for Business Credits: 3
- BUA 325 - Principles of Management and Organization Credits: 3
- BUA 337 - Production and Operations Management Credits: 3
- BUA 343 - Introduction to International Business Credits: 3
- BUA 350 - Business Finance Credits: 3
- BUA 270 - Marketing Credits: 3
- BUA 449 - Strategic Management Credits: 3

## Marketing

- BUA 371 - Services Marketing Credits: 3
- BUA 378 - Marketing Research Credits: 3
- BUA 382 - Consumer Behavior Credits: 3
- BUA 480 - Managerial Marketing Credits: 3

## Plus one of the following:

- BUA 372 - Intergrated Marketing Communication Credits: 3
- BUA 374 - Personal Selling and Sales Management Credits: 3
- BUA 375 - Retail Management Credits: 3
- BUA 376 - International Marketing Credits: 3

## Free Electives (15 credits)

Any courses offered at the University of Maine will fill these electives.

## Required Courses in Suggested Sequence for a B. S. in Business Administration in Marketing

Note that although the following is a suggested curriculum, students should be aware that upper-level marketing classes (not including BUA 270) are offered only once a year. Taking BUA 270 in the sophomore year is assumed.

### First Year - First Semester (15 credits)

- BUA 235 - Information Systems and Technology for Business Credits: 3
- ECO 120 - Principles of Microeconomics Credits: 3
- ENG 101 - College Composition Credits: 3
- PSY 100 - General Psychology Credits: 3
- Elective (general education)

### First Year - Second Semester (15 credits)

- CMJ 103 - Fundamentals of Public Communication Credits: 3
- ECO 121 - Principles of Macroeconomics Credits: 3
- MAT 115 - Applied Mathematics for Business and Economics Credits: 3
- **or**
- MAT 126 - Calculus I Credits: 4  
(math placement test MUST be taken)
- Elective (general education)
- Elective (general education)

### Second Year - First Semester (15-16 credits)

Students should note that several courses satisfy more than one general education requirement allowing for a wider selection of electives later.

- BUA 201 - Principles of Financial Accounting Credits: 3
- BUA 220 - The Legal Environment of Business Credits: 3
- STS 215 - Introduction to Statistics for Business and Economics Credits: 3
- **or**
- STS 232 - Principles of Statistical Inference Credits: 3
- Gen Ed: Population and Environment
- Gen Ed: Lab or Applied Science

### Second Year - Second Semester (15-16 credits)



- BUA 202 - Principles of Managerial Accounting Credits: 3
  - BUA 270 - Marketing Credits: 3
  - BUA 325 - Principles of Management and Organization Credits: 3
  - COS 213 - Advanced Excel Spreadsheet Design Credits: 3
  - Gen Ed: Lab or Applied Science
  - Gen Ed: Artistic and Creative Expression
- Note: The Artistic and Creative expression and Cultural Diversity electives may be satisfied by a careful choice of an English elective.

### Third Year - First Semester (15 credits)

- BUA 343 - Introduction to International Business Credits: 3
- BUA 350 - Business Finance Credits: 3
- BUA 382 - Consumer Behavior Credits: 3
- ENG 317 - Business and Technical Writing Credits: 3
- Three additional credits

### Third Year - Second Semester (15 credits)

- BUA 337 - Production and Operations Management Credits: 3
- BUA 371 - Services Marketing Credits: 3
- Nine additional credits

### Fourth Year - First Semester (12 credits)

- BUA 378 - Marketing Research Credits: 3
- Marketing Elective
- Nine additional credits

### Fourth Year - Second Semester (15 credits)

- BUA 480 - Managerial Marketing Credits: 3
- BUA 449 - Strategic Management Credits: 3
- Nine additional credits

## Minor

### Minor: Accounting

# OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 24

**GPA requirements to earn minor:** 2.0

**Minimum Grade requirements for courses to count toward minor:** A C- or better in BUA 201 and BUA 202.

**Contact Information:** Stephanie Welcome, Associate Dean, 211 DP Corbett, (207)581-1968

Complete the following Required Courses:

- BUA 201 - Principles of Financial Accounting Credits: 3
- BUA 202 - Principles of Managerial Accounting Credits: 3
- BUA 301 - Intermediate Accounting I Credits: 3
- BUA 302 - Intermediate Accounting II Credits: 3
- BUA 305 - Cost Accounting Credits: 3
- BUA 310 - Auditing Credits: 3
- BUA 312 - Federal Taxation of Individuals Credits: 3
- BUA 406 - Advanced Managerial Accounting Credits: 3
- or
- BUA 409 - Accounting for Governmental and Not-For-Profit Entities Credits: 3

A 2.0 cumulative GPA is required to declare the accounting minor.

The accounting minor may be declared, at the earliest, in the second semester of a student's enrollment.

Must earn at least 50% of the BUA credit hours at UMaine.

All BUA classes must be taken for a grade (no pass/fail permitted).

## Minor: Business Administration

# OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 24

**GPA requirements to earn minor:** Must earn a minimum overall GPA of 2.0 in the required BUA/ECO courses.

**Minimum Grade requirements for courses to count toward minor:** Must earn a minimum of a C- in BUA 201, BUA 325, BUA 350 and BUA 370 with only one opportunity to repeat a class.

**Contact Information:** Stephanie Welcomer, Associate Dean, 211 DP Corbett, (207) 581-1968

## Complete the following Required Courses:

- BUA 201 - Principles of Financial Accounting Credits: 3
  - BUA 325 - Principles of Management and Organization Credits: 3
  - BUA 350 - Business Finance Credits: 3
  - BUA 270 - Marketing Credits: 3
  - ECO 120 - Principles of Microeconomics Credits: 3
  - ECO 121 - Principles of Macroeconomics Credits: 3
  - PSY 100 - General Psychology Credits: 3
  - BUA XXX One additional Business course for which prerequisites have been met Credits: 3
- A 2.0 cumulative GPA is required at the time the student declares a business minor  
A business minor may be declared, at the earliest, in the second semester of a student's enrollment  
Must earn at least 50% of the BUA and ECO credit hours at UMaine  
All BUA classes must be taken for a grade (no pass/fail permitted)

## Students wishing to pursue the MBA

**Students applying for admission to the MBA program in their fifth year should take:**

- BUA 201 - Principles of Financial Accounting Credits: 3
- BUA 202 - Principles of Managerial Accounting Credits: 3
- ECO 120 - Principles of Microeconomics Credits: 3
- ECO 121 - Principles of Macroeconomics Credits: 3

In addition, the student should take the GMAT (Graduate Management Admissions Test) during the senior year

## Minor: Management

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 24

**GPA requirements to earn minor:** Must earn a minimum overall GPA of 2.0 in the required BUA/ECO courses.

**Minimum Grade requirements for courses to count toward minor:** Must earn a minimum of a C- in BUA 325 and BUA 343, with only one opportunity to repeat a class.

**Contact Information:** Stephanie Welcomer, Associate Dean, 211 DP Corbett, (207) 581-1968

A 2.0 cumulative GPA is required at the time the student declares a management minor. A management minor may be declared, at the earliest, in the second semester of a student's enrollment.

## Complete the following required courses:

- BUA 325 - Principles of Management and Organization Credits: 3
- BUA 326 - Organizational Behavior Credits: 3
- BUA 330 - Human Resource Management Credits: 3
- BUA 343 - Introduction to International Business Credits: 3
- BUA 460 - Leadership Credits: 3
- ECO 120 - Principles of Microeconomics Credits: 3
- ECO 121 - Principles of Macroeconomics Credits: 3
- PSY 100 - General Psychology Credits: 3

Must earn at least 50% of the BUA and ECO credit hours at UMaine.  
All BUA classes must be taken for a grade (no pass/fail permitted).

## Students wishing to pursue the MBA

Students applying for admission to the MBA program in their fifth year should take the following courses:

- BUA 201 - Principles of Financial Accounting Credits: 3
- BUA 202 - Principles of Managerial Accounting Credits: 3
- ECO 120 - Principles of Microeconomics Credits: 3
- ECO 121 - Principles of Macroeconomics Credits: 3

In addition, the student should take the GMA (Graduate Management Admissions Test) during the senior year.

## Minor: Marketing

### Overview of Degree Requirements

**Minimum number of credits required to earn minor:** 27

**GPA requirements to earn minor:** Must earn a minimum overall GPA of 2.0 in the required BUA/ECO courses.

**Minimum Grade requirements for courses to count toward minor:** Must earn a minimum of a C- in BUA 270, with only one opportunity to repeat a class.

**Contact Information:** Stephanie Welcomer, Associate Dean, 211 DP Corbett, (207) 581-1968

A 2.0 cumulative GPA is required at the time the student declares a marketing minor. A marketing minor may be declared, at the earliest, in the second semester of a student's enrollment.

Must earn at least 50% of the BUA and ECO credit hours at UMaine.

All BUA classes must be taken for a grade (no pass/fail permitted).

## Required Courses (seven):

- BUA 270 - Marketing Credits: 3
- BUA 371 - Services Marketing Credits: 3
- BUA 378 - Marketing Research Credits: 3
- BUA 382 - Consumer Behavior Credits: 3
- ECO 120 - Principles of Microeconomics Credits: 3
- STS 232 - Principles of Statistical Inference Credits: 3
- PSY 100 - General Psychology Credits: 3
- PSY 230 - Social Psychology Credits: 3

## Marketing Elective

**One** from the following list of courses:

- BUA 372 - Intergrated Marketing Communication Credits: 3
- BUA 374 - Personal Selling and Sales Management Credits: 3
- BUA 375 - Retail Management Credits: 3
- BUA 376 - International Marketing Credits: 3
- BUA 490 - Special Topics in Business Administration Credits: 1-3

# College of Education & Human Development

The College of Education and Human Development provides leadership, professional development and research to advance education at all levels and address concerns and changing needs of schools, children and families.

Undergraduate majors are offered in Athletic Training, Child Development and Family Relations with an academic specialization option in Early Childhood Education, Elementary and Secondary Education, and Kinesiology and Physical Education with academic specialization options of Teaching/Coaching and Exercise Science. All majors emphasize a diverse liberal arts background and highly relevant professional training.

Educator preparation programs are accredited by the National Council for Accreditation of Teacher Education and approved by the Maine Department of Education. A partnership with area PreK-12 schools provides a Professional Development School model and realistic teaching and learning settings for students and faculty. In addition, a campus nursery school and kindergarten serves as a lab school where Early Childhood and Education students can observe and learn about the behaviors of young children.

The Human Development curriculum meets the standards and requirements of the National Council of Family Relations' Certified Family Life Educator designation, which enables graduates to quickly complete the application process for Certified Family Life Educator status.

The curriculum-and clinical-based Athletic Training major is accredited by the Commission on Accreditation of Athletic Training Education (CAATE). These academic and broad clinical experiences are required for eligibility for the National Athletic Trainers Association Board of Certification exam, the professional credential required by most employers.

**Effective January 2008**, the College of Education and Human Development requires external transfer students wishing to enroll in any of the teaching certification programs to successfully pass PRAXIS I based on State of Maine requirements. All transfer students for any College of Education and Human Development program must have a minimum 2.5 GPA from an accredited institution.

## **ACADEMIC PROGRAMS:**

*Bachelor of Science in:*

Athletic Training

Child Development and Family Relations  
With an Early Childhood Education option

Elementary Education  
With concentrations available in:

Art

Canadian Studies

Disability Studies

English

Environmental Education

French

German

Honors

Human Development

International Affairs

Liberal Arts

Life and Physical Sciences

Mathematics

Music

Native American Studies  
Peace Studies  
Performing Arts  
Philosophy  
Psychology  
Social Studies  
Sociology  
Spanish  
Women's Studies

Kinesiology and Physical Education  
Exercise Science (administration or science option)  
Teaching/Coaching

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

*Minors:*

Child Development and Family  
Relations  
Education  
Exercise Science in Kinesiology and  
Physical Education

**College of Education and Human Development Notes:**

**Teacher Certification:**

The College of Education and Human Development's Elementary, Early Childhood, 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 state-identified examinations and all other state requirements to receive teacher certification in Maine.

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 \$100.00 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.**

**Undergraduate Program Contact**

Mary Mahoney-O'Neil  
144 Shibles Hall  
(207) 581-2485  
Mary.MahoneyONeil@umit.maine.edu

**Graduate Program**

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**

Janet Spector  
306 Shibles Hall  
(207) 581-2459  
janet.spector@umit.maine.edu

## **Major**

## **Athletic Training**

### **OVERVIEW OF DEGREE REQUIREMENTS**

**Minimum number of credits required to graduate:** 126

**Minimum Cumulative GPA required to graduate:** 2.5

**Minimum Grade requirements for courses to count toward major:** In addition to KPE 250 and KPE 273, all professional education classes must have a minimum grade of B- or higher.

**Other GPA requirements to graduate:** None.

**Required Course(s) for fulfilling Capstone Experience:** KPE 427

**Contact Information:** The Advising Center, 100 Shibles Hall, (207) 581-2412 or email the Advising Center at advisingcenter@maine.edu

The Athletic Training Program (ATP) is nationally accredited by the Commission on Accreditation of Athletic Training Education. UMaine's ATP 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 the community Athletic Trainers and Health Care Providers once admitted into the program. With a wide variety of Clinical Experiences, Athletic Training Students are exposed to athletic training at the high school level, college and university levels, at private practices, and in local hospitals and health care facilities. Hands-on learning begins as early as the second year of college for these students.

Students enter ATP after being accepted in the "professional" aspect of the education program. This consists of successfully completing several courses and a Candidacy Application. Students must maintain a 2.5 overall GPA and a B- or better in all Athletic Training courses to remain in the ATP once accepted. All transfer students must apply to the ATP and complete all Athletic Training Clinical Experience courses offered by UMaine. Learn of our competitive admissions policy on our website.

## **Required Courses in Suggested Sequence for the B.S. in Athletic Training**

### **First Year - First Semester**



- BIO 100 - Basic Biology Credits: 4
- EHD 100 - New Student Seminar in Education and Human Development Credits: 1  
(waived for transfer students)
- ENG 101 - College Composition Credits: 3
- KPE 100 - Introduction to Athletic Training Credits: 1
- PSY 100 - General Psychology Credits: 3
- General Education Course Credits: 3

## First Year - Second Semester

- BIO 208 - Anatomy and Physiology Credits: 4
- KPE 250 - Prevention and Care for Sports Injuries Credits: 3
- KPE 253 - Lifetime Fitness for Health Credits: 3
- MAT 122 - Pre-Calculus Credits: 4  
or a higher level Mathematics Course
- General Education Course Credits: 3

## Second Year - First Semester

- FSN 101 - Introduction to Food and Nutrition Credits: 3
- KPE 201 - Athletic Training-Clinical Skills I Credits: 3
- KPE 270 - Motor Development and Learning Credits: 3
- KPE 273 - Anatomy and Pathologies of Injuries and Conditions Credits: 3
- PHY 111 - General Physics I Credits: 4

## Second Year - Second Semester

- KPE 202 - Athletic Training-Clinical Skills II Credits: 3
- KPE 276 - Manual Muscle Testing and Goniometry Credits: 3
- KPE 386 - Evaluation of Lower Extremity Injuries and Conditions Credits: 3
- KPE 388 - Therapeutic Modalities Credits: 4
- General Education Course Credits: 3

## Summer

- KPE 262 - Methods of Teaching Physical Activity Credits: 3
- KPE 262 is a May Term Course that should be taken between the 2nd and 3rd Academic Years.

## Third Year - First Semester

- CHY 121 - Introduction to Chemistry Credits: 3
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1

- KPE 301 - Athletic Training-Clinical Skills III Credits: 3
- KPE 385 - Evaluation of Upper Extremity Injuries and Conditions Credits: 3
- KPE 387 - Therapeutic Exercise for Musculoskeletal Injuries Credits: 4
- KPE 400 - General Medical Conditions and Disabilities in Sport Credits: 3

### Third Year - Second Semester

- KPE 300 - Professionalism in Athletic Training Credits: 1
- KPE 302 - Athletic Training-Clinical Skills IV Credits: 3
- KPE 303 - Pharmacology in Athletic Training Credits: 1
- KPE 376 - Kinesiology Credits: 3
- KPE 378 - Physiology of Exercise Credits: 3
- KPE 383 - Organization and Administration in Athletic Training Credits: 3
- KPE 389 - Aquatherapy Credits: 1

### Fourth Year - First Semester

- ENG 317 - Business and Technical Writing Credits: 3
- KPE 372 - Statistical Methods and Assessments in Physical Education Credits: 3
- KPE 401 - Athletic Training Seminar Credits: 3
- KPE 426 - Exercise Prescription and Leadership Credits: 3
- General Education Course Credits: 3

### Fourth Year - Second Semester

- KPE 367 - Adapted Physical Education Credits: 3
- KPE 427 - Health Fitness Internship Credits: 3-6
- KPE 490 - Nutrition for Sports and Exercise Credits: 3
- General Education Course Credits: 3

## Child Development and Family Relations

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** CHF 200 and CHF 201 must have a minimum grade of C. Students in the Early Childhood Education concentration must have a minimum grade of B- in CHF 200, CHF 201, CHF 203, CHF 321, CHF 322, CHF 329, CHF 331 or EHD 203, CHF 304 or EDG 400, EHD 101, EHD 202, EHD 204, EHD 301, ERL 317, ERL 319, and SED 302.

**Other GPA requirements to graduate:** 2.5 in concentrations. Students in Early Childhood Education need a 2.75 GPA to apply for teacher candidacy.

**Required Course(s) for fulfilling Capstone Experience:** CHF 423 or 424

**Contact Information:** Mary Mahoney-O'Neil, Assistant Dean, 144 Shibles Hall 581-2484 or 581-2435

### **Transfer Policy**

Students at the University of Maine wishing to transfer to this major should have a GPA of 2.75 for Early Childhood Education concentration or a 2.5 GPA for all other concentrations. Students not meeting these minimum GPAs should submit an application consisting of a resume, and an essay identifying their professional goals. A faculty committee will review applications. Application packets should be submitted to 118 Merrill Hall. All other students need to apply through the Admissions Office.

## **Requirements:**

### **English:**

Early Childhood Education concentration requires 1 ENG literature course Credits: 3

### **Communication:**

CMJ 102, 103 or 106

### **Math:**

MAT 107 and 108 are required for the Early Childhood Education concentration. The Research concentration requires STS 232

### **Psychology:**

PSY 100

## **Required Courses in Suggested Sequence for B.S. in Child Development and Family Relations, Individual and Family Studies concentration**

The sequence for each concentration is adjusted as needed to meet requirements.

### **First Year - First Semester**

- CHF 200 - Family Interaction Credits: 3
- CHF 201 - Introduction to Child Development Credits: 3
- EHD 100 - New Student Seminar in Education and Human Development Credits: 1
- ENG 101 - College Composition Credits: 3
- General Education Requirement Credits: 3

### **First Year - Second Semester**

- CMJ 102 - Fundamentals of Interpersonal Communication Credits: 3  
or
- CMJ 103 - Fundamentals of Public Communication Credits: 3  
or
- CMJ 106 - Storytelling Credits: 3
- PSY 100 - General Psychology Credits: 3
- CHF Elective Credits: 3
- General Education Requirement Credits: 6

## Second Year - First Semester

- CHF Elective Credits: 3
- General Education Requirements Credits: 13

## Second Year - Second Semester

- CHF Elective Credits: 3
- General Education Requirements Credits: 12

## Third Year - First Semester

- CHF Elective Credits: 6
- General Education Requirements Credits: 9

## Third Year - Second Semester

- CHF Elective Credits: 6
- General Education Requirements Credits: 3
- Electives Credits: 6

## Fourth Year - First Semester

- CHF 423 - Professional Seminar in Child Development and Family Relations Credits: 3
- CHF 496 - Field Experience in Human Development and Family Studies Credits: 1-6
- General Education Requirements Credits: 3
- CHF Elective Credits: 3
- Electives Credits: 3

## Fourth Year - Second Semester

- CHF Elective Credits: 3-6
- General Education Requirements Credits: 3
- Electives Credits: 9

# Child Development and Family Relations Concentrations

## CORE COURSES

- CHF 200 - Family Interaction Credits: 3
- CHF 201 - Introduction to Child Development Credits: 3
- CHF 423 - Professional Seminar in Child Development and Family Relations Credits: 3
- **or**
- CHF 424 - Professional Seminar for Early Childhood Specialists Credits: 3

### **Field Experience (choice determined by your concentration:)**

- CHF 421 - Student Teaching in Early Childhood Credits: 12
- **or**
- CHF 422 - Field Placement in Early Childhood Education Credits: 3-6
- **or**
- CHF 496 - Field Experience in Human Development and Family Studies Credits: 1-6

## 1. Individual and Family Studies Concentration

This concentration supports professional preparation to work with children and families in community settings.

Course Requirements: 21 credit hours chosen from the following possible elective CHF courses:

- CHF 203 - Practicum in Early Childhood Programs Credits: 3
- CHF 303 - Infant/Toddler Care and Development Credits: 3
- CHF 311 - Creativity and the Young Child Credits: 3
- CHF 321 - Curriculum and Methods for Teaching Young Children Science Credits: 3
- CHF 322 - Curriculum and Methods for Teaching Social Studies Credits: 3
- CHF 329 - Curriculum and Methods for Teaching Young Children Math Credits: 3
- CHF 331 - Cognitive Development Credits: 3
- CHF 351 - Human Sexuality Credits: 3
- CHF 381 - Family Resource Management Credits: 3
- CHF 385 - Personal and Family Finance Credits: 3
- CHF 401 - Peer Education Credits: 3
- CHF 404 - Selected Topics in Child Development and Family Life Credits: 3
- CHF 406 - Introduction to Research Methods in Child Development and Family Relations Credits: 3
- CHF 409 - Special Problems in Child Development and Family Life Credits: Ar
- CHF 417 - Introduction to Leadership in Early Childhood Education Credits: 3
- CHF 431 - Parenting Credits: 3
- CHF 432 - Socialization of the Child Credits: 3
- CHF 433 - Adolescence Credits: 3
- CHF 434 - Adult Development and Aging Credits: 3
- CHF 441 - Family Life Education Methods Credits: 3
- CHF 442 - Helping Skills Credits: 3
- CHF 450 - Early Childhood Special Education - Inclusion in the Early Childhood Classroom Credits: 3
- CHF 451 - Family Relationships Credits: 3
- CHF 452 - Violence in the Family Credits: 3
- CHF 488 - Family Legal Issues Credits: 3

- CHF 496 - Field Experience in Human Development and Family Studies Credits: 1-6

## 2. Certified Family Life Educator Concentration

This concentration allows students to apply for provisional certification from the National Council on Family Relations (NCFR) for the profession of family life education. Family life education focuses on healthy family functioning with the goal of teaching and fostering the skills to enable individuals and families to function optimally.

Course Requirements: 24 credit hours in the following eight required CHF courses:

- CHF 351 - Human Sexuality Credits: 3
- CHF 381 - Family Resource Management Credits: 3
- CHF 431 - Parenting Credits: 3
- CHF 434 - Adult Development and Aging Credits: 3
- CHF 441 - Family Life Education Methods Credits: 3
- CHF 442 - Helping Skills Credits: 3
- CHF 451 - Family Relationships Credits: 3
- CHF 488 - Family Legal Issues Credits: 3

## 3. Early Childhood Education (Maine public school teaching certification) Concentration

This concentration allows students to apply for the state of Maine Endorsement 029: Early Elementary Teacher (public school grades K-3) and to be State eligible to apply for the Endorsement 081: Early Childhood Teacher. The Endorsement 081, on a Maine teacher certificate, allows the holder to teach students birth to school age 5. A 2.75 accumulative grade point average is required to apply for teacher candidacy.

Course Requirements: 61 credit hours in the following 17 required courses:

- CHF 203 - Practicum in Early Childhood Programs Credits: 3
- CHF 303 - Infant/Toddler Care and Development Credits: 3
- CHF 304 - Practicum in Early Childhood Education K-3 Credits: 3
- CHF 321 - Curriculum and Methods for Teaching Young Children Science Credits: 3
- CHF 322 - Curriculum and Methods for Teaching Social Studies Credits: 3
- CHF 329 - Curriculum and Methods for Teaching Young Children Math Credits: 3
  
- CHF 331 - Cognitive Development Credits: 3
- or**
- CHF 421 - Student Teaching in Early Childhood Credits: 12
  
- CHF 450 - Early Childhood Special Education - Inclusion in the Early Childhood Classroom Credits: 3
- EDT 400 - Integrating Technology for Teaching and Learning Credits: 3
- EHD 101 - The Art and Science of Teaching Credits: 3
- EHD 202 - Education in a Multicultural Society Credits: 3
- EHD 203 - Educational Psychology Credits: 3
- EHD 204 - Teaching and Assessing for Student Learning Credits: 3
- EHD 301 - Classroom-based Prevention and Intervention: Supporting Positive Behavior and Academic Achievement Credits: 3
- ERL 319 - Teaching Reading and Language Arts in Preschool to Grade 3 Credits: 4

- SED 302 - Adapting Instruction for Students with Disabilities Credits: 3

Social Studies (6 credits) : Social Studies = 2 courses from the areas of History (HTY), Anthropology (ANT), Geography (GEO), Economics (ECO); Political Science/Government (POS) and/or Native American Studies (NAS)- NAS 101, 102, 201, 298, 401, 498. Students enrolled in the Honors College achieve the Social Studies Requirement by successfully completing two of the following courses: HON 111, HON 112, HON 170, HON 211, HON 212

**Additional Requirements:**

Students must:

- Pass Praxis CORE
- Be admitted to Teacher Candidacy
- Pass Praxis II prior to the student teacher semester
- Provide proof of fingerprinting; and
- Have a background check authorization by the Maine Department of Education

## 4. Early Childhood Professional Concentration

This concentration prepares students to work in social service agencies supporting young children and their families, or as an early educator in childcare, Headstart, or private pre-K. This concentration does not lead to State teaching certification.

Course Requirements: a minimum of 27 credit hours in CHF courses including:  
21 credit hours in the following seven required CHF courses:

- CHF 203 - Practicum in Early Childhood Programs Credits: 3
- CHF 303 - Infant/Toddler Care and Development Credits: 3
- CHF 321 - Curriculum and Methods for Teaching Young Children Science Credits: 3
- CHF 322 - Curriculum and Methods for Teaching Social Studies Credits: 3
- CHF 329 - Curriculum and Methods for Teaching Young Children Math Credits: 3
- CHF 450 - Early Childhood Special Education - Inclusion in the Early Childhood Classroom Credits: 3
- EHD 462 - Workshop in Elementary Education (Activity) Credits: 1-6

6 additional credit hours chosen from the following possible elective CHF courses:

- CHF 311 - Creativity and the Young Child Credits: 3
- CHF 331 - Cognitive Development Credits: 3
- CHF 417 - Introduction to Leadership in Early Childhood Education Credits: 3
- CHF 431 - Parenting Credits: 3
- CHF 432 - Socialization of the Child Credits: 3
- CHF 451 - Family Relationships Credits: 3
- CHF 452 - Violence in the Family Credits: 3
- CHF 488 - Family Legal Issues Credits: 3

**Additional Requirement:**

Students must

- complete the core course of CHF 422: Field Experience in Early Childhood Settings (3-6 cr) in a program/agency that supports young children birth to age 8.

## 5. Research Concentration

This concentration provides students with direct experiences in the conduct of applied research in human, family and relationship development. Students typically work closely with a faculty member on a research project of mutual interest, and are well positioned for future graduate study.

Course Requirements: a minimum of 24 credit hours in CHF or HUD courses including:  
9 credit hours in the following three required courses:

- STS 232 - Principles of Statistical Inference Credits: 3  
**and**
- CHF 406 - Introduction to Research Methods in Child Development and Family Relations Credits: 3  
**and**
- CHF 409 - Special Problems in Child Development and Family Life Credits: Ar

15 additional credit hours chosen from either CHF courses or advanced HUD courses

- CHF 203 - Practicum in Early Childhood Programs Credits: 3
- CHF 303 - Infant/Toddler Care and Development Credits: 3
- CHF 311 - Creativity and the Young Child Credits: 3
- CHF 321 - Curriculum and Methods for Teaching Young Children Science Credits: 3
- CHF 322 - Curriculum and Methods for Teaching Social Studies Credits: 3
- CHF 329 - Curriculum and Methods for Teaching Young Children Math Credits: 3
- CHF 331 - Cognitive Development Credits: 3
- CHF 351 - Human Sexuality Credits: 3
- CHF 381 - Family Resource Management Credits: 3
- CHF 385 - Personal and Family Finance Credits: 3
- CHF 401 - Peer Education Credits: 3
- CHF 404 - Selected Topics in Child Development and Family Life Credits: 3
- CHF 417 - Introduction to Leadership in Early Childhood Education Credits: 3
- CHF 431 - Parenting Credits: 3
- CHF 432 - Socialization of the Child Credits: 3
- CHF 433 - Adolescence Credits: 3
- CHF 434 - Adult Development and Aging Credits: 3
- CHF 441 - Family Life Education Methods Credits: 3
- CHF 442 - Helping Skills Credits: 3
- CHF 450 - Early Childhood Special Education - Inclusion in the Early Childhood Classroom Credits: 3
- CHF 451 - Family Relationships Credits: 3
- CHF 452 - Violence in the Family Credits: 3
- CHF 488 - Family Legal Issues Credits: 3
- CHF 496 - Field Experience in Human Development and Family Studies Credits: 1-6
- See Graduate Catalog for Advanced level HUD courses.

## Elementary Education

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate: 120**

**Minimum Cumulative GPA required to graduate: 2.0**



**Minimum Grade requirements for courses to count toward major:** A B- or better in all professional education classes is required.

**Other GPA requirements to graduate:** Students must have a minimum cumulative GPA of 2.75 to be eligible to apply for teacher candidacy and to student teach.

**Required Course(s) for fulfilling Capstone Experience:** 12 credits of EHD 490 for students in the Teaching option or EHD 493 for students in the Non-Teaching option.

**Contact Information:** The Advising Center, 100 Shibles Hall (207) 581-2412 or email the Advising Center at: [advisingcenter@maine.edu](mailto:advisingcenter@maine.edu)

The college's educator preparation programs emphasize a diverse liberal arts background and highly relevant professional training. The undergraduate teacher education programs are fully accredited by the National Council for Accreditation of Teacher Education (NCATE) and approved by the State of Maine. 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.

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 (efolio) that includes a transcript of their academic work to date which reflects a grade point average of at least 2.75, an analysis of one field experience in a K-8 classroom, and documentation of passing the state required PRAXIS I examination. **NOTE:** As a State of Maine approved program, we will adhere to state certification requirements and adapt our program to meet changing state regulations. For example, students are now required to pass PRAXIS II prior to student teaching. For more information about the state required PRAXIS exam, visit <http://www.umaine.edu/edhd/academic-programs/praxis-test-series/>.

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 curriculum, a prelude to student teaching. During 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.

Areas of Specialization in the Elementary Education program are:

\*English

\*Science

\*Social Studies

\*Math

\*ESL

\*Languages (Spanish and French)

Child Development and Family Relations

\*Indicates that this Specialization leads to either Highly Effective Status or a teaching endorsement

## General Requirements

- MAT 107 - Elementary Descriptive Geometry Credits: 3
- MAT 108 - Elementary Numerical Mathematics From A Modern Perspective Credits: 3
- PSY 100 - General Psychology Credits: 3

## Professional Education-Prior to Teacher Candidacy

In order to be admitted to Teacher Candidacy and upper level courses in education, students must complete the following prerequisite courses with a minimum grade of C-, and achieve an overall cumulative GPA of 2.75. They must also fulfill all portfolio requirements, including passing Praxis I and documentation of the field experience.

- CHF 201 - Introduction to Child Development Credits: 3
- EHD 202 - Education in a Multicultural Society Credits: 3
- EHD 203 - Educational Psychology Credits: 3
- EDT 400 - Integrating Technology for Teaching and Learning Credits: 3

## Core Courses

All core courses require a grade of B- or better. Core classes are as follows:

- CHF 201 - Introduction to Child Development Credits: 3
- EHD 202 - Education in a Multicultural Society Credits: 3
- EHD 203 - Educational Psychology Credits: 3
- SED 302 - Adapting Instruction for Students with Disabilities Credits: 3  
Student Teaching and seminar when applicable.  
Equivalent courses at UMaine are acceptable providing they use the same Key Assessment as used in the Core Course.

## Professional Courses

All Professional courses will require a grade of B- or better.

Professional courses include:

- EHD 400 - Field Observation (Activity) Credits: 1-6
- EMA 314 - Teaching Mathematics in Elementary School Credits: 3
- ERL 317 - Children's Literature Credits: 3
- ERL 319 - Teaching Reading and Language Arts in Preschool to Grade 3 Credits: 4
- ERL 320 - Teaching Reading and Language Arts in Grades 4-8 Credits: 3
- ESC 316 - Teaching Science in the Elementary School (K-8) Credits: 3
- ESS 315 - Teaching Social Studies in the Elementary School Credits: 3

## Required Courses in Suggested Sequence for the B.S. in Elementary Education

### First Year

- EHD 100 - New Student Seminar in Education and Human Development Credits: 1  
(waived for transfer students)

- EHD 101 - The Art and Science of Teaching Credits: 3
- CHF 201 - Introduction to Child Development Credits: 3
- ENG 101 - College Composition Credits: 3
- PSY 100 - General Psychology Credits: 3
- General Education Requirements and Concentration Electives Credits: 18-21
- Take and Pass Praxis I and Fingerprinting

## Second Year

- EHD 202 - Education in a Multicultural Society Credits: 3
- EHD 203 - Educational Psychology Credits: 3
- MAT 107 - Elementary Descriptive Geometry Credits: 3
- MAT 108 - Elementary Numerical Mathematics From A Modern Perspective Credits: 3
- General Education Requirements and Concentration Electives Credits: 18  
--Apply for Teacher Candidacy--

## Third Year

- ERL 317 - Children's Literature Credits: 3
- ERL 319 - Teaching Reading and Language Arts in Preschool to Grade 3 Credits: 4
- SED 302 - Adapting Instruction for Students with Disabilities Credits: 3
- General Education Requirements and Concentration Electives Credits: 15-18  
--Fingerprinting must be obtained prior to applying for EDG 400--  
--Take & Pass Praxis II prior to applying for STT 490--

## Fourth Year - Fall Semester

- EHD 400 - Field Observation (Activity) Credits: 1-6
- EMA 314 - Teaching Mathematics in Elementary School Credits: 3
- ERL 320 - Teaching Reading and Language Arts in Grades 4-8 Credits: 3
- ESC 316 - Teaching Science in the Elementary School (K-8) Credits: 3
- ESS 315 - Teaching Social Studies in the Elementary School Credits: 3

## Fourth Year - Spring Semester

- EHD 490 - Full-Day Student Teaching (Elementary) Credits: 1 - 12
- EHD 498 - Seminar for Interns Credits: 1-3

## Academic Specialization

- 24 credits hours
- GPA of 2.5 in the specialization to graduate
- No more than 2 courses may come from courses listed as either General Education or COEHD requirements.
- At least 12 credits must be in courses at the 200 level or above with the exception of Mathematics and Science specializations.
- Academic advisors may approve up to 2 related courses in departments outside the department of the specialization.

## Areas of Specialization

### \*1) English

- 24 credits of ENG
- 12 of those credits must be at 200 level or above

### \*2) Social Studies

- 24 credits of ANT, GEO, HTY, ECO, POS, NAS
- 12 of those credits must be at 200 level or above

### \*3) Math

- 24 credits of MAT

### \*4) Science

24 credits of science courses, of those 9 required Life Science and 9 required Physical Science (to qualify for middle level endorsement)

#### **Life Science recommended courses**

- BIO 100 - Basic Biology Credits: 4
- BIO 200 - Biology of Organisms Credits: 4
- BIO 208 - Anatomy and Physiology Credits: 4
- BIO 222 - Biology: The Living Science Credits: 3
- BIO 223 - Biology: The Living Science Laboratory Credits: 1
- SMS 100 - Introduction to Ocean Science Credits: 3
- biology, ecology, botany, zoology, anatomy, physiology, environmental science, entomology, ornithology

#### **Physical Science recommended courses:**

- CHY 101 - Chemistry for Everyday Living Credits: 3
- CHY 102 - Chemistry for Everyday Living Laboratory Credits: 1

- ERS 102 - Environmental Geology of Maine Credits: 4
- PHY 101 - Physics by Inquiry I Credits: 4
- PHY 102 - Physics by Inquiry II Credits: 4
- PSE 100 - Plant Science Credits: 4
- chemistry, physics, geology, earth science, soil science, astronomy, meteorology, oceanography

## \*5) ESL

### **Required CORE ESL courses**

- ELL 470 - The Teaching of English As A Second Language Credits: 3
- ELL 475 - Curriculum Development in English As A Second Language/English As A Foreign Language Contexts Credits: 3
- ELL 480 - Testing and Assessment in English As A Second Language/English As A Foreign Language Contexts Credits: 3
- ELL 485 - Applied Linguistics and Second Language Acquisition Principles for ESL/EFL Teachers Credits: 3
- \* ELL 491 - Multiculturalism and Diversity for ESL/EFL Contexts Credits: 3  
\*or other MDOE approved courses

### **Electives (9 credits):**

- ANT 102 - Introduction to Anthropology: Diversity of Cultures Credits: 3
- ANT 300 - Basic Theory in Cultural Anthropology Credits: 3
- CHF 331 - Cognitive Development Credits: 3
- CSD 381 - Later Language Development Credits: 3
- DIS 300 - Disability: Interaction of Human Diversity and Global Environment Credits: 3
- EHD 202 - Education in a Multicultural Society Credits: 3
- EHD 425 - Field Experience: Urban and Rural Education Credits: 3
- INT 410 - (ANT, ENG, MLC) Introduction to the Study of Linguistics Credits: 3
- MLC 175 - Multiculturalism in America Credits: 3
- PSY 230 - Social Psychology Credits: 3
- PSY 425 - Social Issues in Developmental Psychology Credits: 3
- SOC 201 - Social Inequality Credits: 3
- SWK 330 - Contemporary Issues in Diversity and Pluralism Credits: 3
- SWK 350 - Human Behavior and the Social Environment I Credits: 3

## \*6) Languages

### **Spanish**

- 24 credits of SPA
- 12 of those credits must be at the 200 level or higher

### **French**

- 24 credits of FRE
- 12 of those credits must be at the 200 level or higher

## 7) Child Development and Family Relations

- 24 credits of CHF including CHF 200 and CHF 201

## **Kinesiology and Physical Education**

### **OVERVIEW OF DEGREE REQUIREMENTS - Teaching/Coaching Concentration**

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** A grade of B- or higher in EHD 201, EHD 203, KPE 262 and KPE 367 is required.

**Other GPA requirements to graduate:** In order to be admitted to teacher candidacy and upper level KPE courses, students must have a cumulative GPA of 2.5 and a GPA of 2.7 in KPE coursework.

**Required Course(s) for fulfilling Capstone Experience:** 12 credits STT 499 for students in the Teaching Option; 3 credits of EDG 499 for students in the non-teaching option.

**Contact Information:** The Advising Center, 100 Shibles Hall, (207) 581-2412 or email the Advising Center at: [advisingcenter@maine.edu](mailto:advisingcenter@maine.edu)

### **OVERVIEW OF DEGREE REQUIREMENTS - Exercise Science (Administration)**

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** All courses in the minor must be completed with a minimum GPA of 2.0.

**Other GPA requirements to graduate:** Students must declare a business minor. In order to declare it, students must have a cumulative average of 2.5

**Required Course(s) for fulfilling Capstone Experience:** KPE 427

**Contact Information:** The Advising Center, 100 Shibles Hall, (207) 581-2412 or email the Advising Center at: [advisingcenter@maine.edu](mailto:advisingcenter@maine.edu)

### **OVERVIEW OF DEGREE REQUIREMENTS - Exercise Science (Science)**

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** None.

**Other GPA requirements to graduate:** Admission to advanced standing (Junior year) and acceptance for final internship requires a cumulative GPA of 2.0.

**Required Course(s) for fulfilling Capstone Experience:** KPE 427

**Contact Information:** The Advising Center, 100 Shibles Hall, (207) 581-2412 or email the Advising Center at: advisingcenter@maine.edu

#### **OVERVIEW OF DEGREE REQUIREMENTS ■ Exercise Science (Innovation Engineering)**

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** None.

**Other GPA requirements to graduate:** Students must declare the Innovation Engineering Minor. All courses within the minor must be completed with a minimum GPA of 2.9

**Required Course(s) for fulfilling Capstone Experience:** KPE 427

**Contact Information:** The Advising Center, 100 Shibles Hall, (207) 581-2412 or email the Advising Center at: advisingcenter@maine.edu

#### **OVERVIEW OF DEGREE REQUIREMENTS ■ Exercise Science (Outdoor Sports Science)**

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** None.

**Other GPA requirements to graduate:** Students must declare the Outdoor Education minor.

**Required Course(s) for fulfilling Capstone Experience:** KPE 427

**Contact Information:** The Advising Center, 100 Shibles Hall, (207) 581-2412 or email the Advising Center at: advisingcenter@maine.edu

Students in the Kinesiology and Physical Education (KPE) programs pursue Teacher Certification or Exercise Science. Each career preparation path leads to a thorough physiological, mechanical and developmental understanding of human health and physical performance. Upon graduation, students become teachers, coaches, fitness specialists/administrators, athletic trainers or pursue advanced degrees in allied health fields such as: physical therapy, chiropractic medicine, physician or physician's assistant.

Students in KPE use state-of-the-art metabolic and biomechanical analysis systems to develop their understanding of human work capacity and movement. They practice with the latest applications and modalities for injury evaluation and rehabilitation.

In a number of applied settings, students work a wide variety of age groups and physical abilities gaining valuable "hands on" experience.

### **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. This degree program is approved by the Maine Department of Education and accredited by the National Council of Accreditation of Teacher Education.

### **Exercise Science**

Within our Exercise Science program there are four concentration areas:

**Sciences Option:** The laboratory science-based option prepares students for post-graduate programs in allied health. Graduates from this option go on to attend schools of medicine, physical therapy, chiropractic medicine, nurse practitioner, physician assistant or other medically-based programs of study. This concentration requires an additional 12-15 hours, beyond the major requirements, of laboratory sciences. Within the concentration area some lab science hours may be substituted with specific 300-500 level KPE courses upon permission.

**Business Management Option:** Students graduate with an academic minor in Business. They are prepared for careers in allied health as well as the private health/fitness industry, with an emphasis on operational management. Students seeking careers in the field of outdoor recreation can graduate from our Exercise Science program with an academic minor in outdoor education.

**Outdoor Sports Science Option:** Along with this degree, students earn no less than four national certifications including Wilderness First Responder (WFR). This curriculum choice also prepares students to sit for the rigorous Maine Guide exam for Recreation offered by the Maine Department of Inland Fisheries & Wildlife.

**Innovation Engineering Option:** This program allows students to create, communicate, and realize/commercialize unique ideas in the field of exercise science. The objective is to give students the tools and confidence needed to create their own opportunities, and to lead within their careers.

## **Required Courses in Suggested Sequence for the B.S. in Kinesiology and Physical Education - Teacher Certification**

During their third year of study students are admitted to candidacy in the Teacher Preparation Program by successfully submitting an e-portfolio which includes documentation of one school experience, an essay addressing a topic in education, verification of technology competence, and a transcript, which indicates a 2.75 grade point average and completion of the PRAXIS I examination. **NOTE:** As a State of Maine approved program, we will adhere to state certification requirements and adapt our program to meet changing state regulations. For example, students are now required to pass PRAXIS II prior to student teaching.

### **First Year - First Semester**

- BIO 100 - Basic Biology Credits: 4
- EHD 100 - New Student Seminar in Education and Human Development Credits: 1
- ENG 101 - College Composition Credits: 3
- KPE 237 - Swimming Skills Credits: 1
- KPE 253 - Lifetime Fitness for Health Credits: 3
- General Education Course Credits: 3



## First Year - Second Semester

- BIO 208 - Anatomy and Physiology Credits: 4
- KPE 250 - Prevention and Care for Sports Injuries Credits: 3
- General Education Courses Credits: 9

## Second Year - First Semester

- EHD 202 - Education in a Multicultural Society Credits: 3
- KPE 262 - Methods of Teaching Physical Activity Credits: 3
- KPE 270 - Motor Development and Learning Credits: 3
- KPE 271 - History and Philosophy of Kinesiology and Physical Education Credits: 3
- KPE 273 - Anatomy and Pathologies of Injuries and Conditions Credits: 3
- PSY 100 - General Psychology Credits: 3
- Take Praxis I and Fingerprinting

## Second Year - Second Semester

- EHD 203 - Educational Psychology Credits: 3
- KPE 344 - Principles of Coaching Credits: 3
- KPE required skills Credits: 3
- Computer or Math Course Credits: 3
- Self-Initiated Field Observation-Five (5) full days (During Spring Break or end of Spring semester)

## Third Year - First Semester

- KPE 367 - Adapted Physical Education Credits: 3
- KPE 376 - Kinesiology Credits: 3
- Concentration Courses Credits: 6
- KPE Required Skills Credits: 3
- Submit Teacher Candidacy E-Folio by semester deadline.

## Third Year - Second Semester

- KPE 364 - Elementary School Physical Education Credits: 3
- KPE 350 - Educational Gymnastics, Games and Dance Credits: 3
- KPE 378 - Physiology of Exercise Credits: 3
- Concentration Courses Credits: 6
- Take Praxis II before September 1st

## Fourth Year - First Semester

- KPE 365 - Curriculum and Instruction in Secondary Physical Education Credits: 3
- KPE 372 - Statistical Methods and Assessments in Physical Education Credits: 3
- KPE Required Skills Credits: 3
- Concentration Course Credits: 3

## Fourth Year - Second Semester

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

## Required Courses in Suggested Sequence for the B.S. in Kinesiology and Physical Education - Exercise Science (Administration Option)

### First Year - First Semester

- BIO 100 - Basic Biology Credits: 4
- ENG 101 - College Composition Credits: 3
- EHD 100 - New Student Seminar in Education and Human Development Credits: 1
- Gen Ed - Cultural Diversity Credits: 3
- Gen Ed Elective Credits: 3
- KPE 253 - Lifetime Fitness for Health Credits: 3

### First Year - Second Semester

- BIO 208 - Anatomy and Physiology Credits: 4
- Gen Ed - Quantitative
- Western Cultural Tradition.
- KPE 270 - Motor Development and Learning Credits: 3
- PSY 100 - General Psychology Credits: 3

### Second Year - First Semester

- BMB 207 - Fundamentals of Chemistry Credits: 3
- BMB 209 - Fundamentals of Chemistry Laboratory Credits: 1
- Concentration ECO 120 Credits: 3
- KPE 250 - Prevention and Care for Sports Injuries Credits: 3
- KPE 262 - Methods of Teaching Physical Activity Credits: 3
- KPE 372 - Statistical Methods and Assessments in Physical Education Credits: 3

## Second Year - Second Semester

- Concentration ECO 121 Credits: 3
- EDT 400 - Integrating Technology for Teaching and Learning Credits: 3
- Gen Ed ENG 317 Credits: 3
- KPE 273 - Anatomy and Pathologies of Injuries and Conditions Credits: 3
- KPE 376 - Kinesiology Credits: 3

## Third Year - First Semester

- Concentration BUA 201 Credits: 3
- Elective Credits: 3
- KPE 286 - Challenge Course Facilitator Skills Credits: 3
- KPE 377 - Biomechanics Credits: 3
- KPE 378 - Physiology of Exercise Credits: 3
- Gen Ed Population and the Environment Credits: 3

## Third Year - Second Semester

- Concentration BUA 325 Credits: 3
- Concentration BUA 350 Credits: 3
- FSN 101 - Introduction to Food and Nutrition Credits: 3
- KPE 367 - Adapted Physical Education Credits: 3
- KPE 425 - Health Promotion and Disease Prevention Credits: 3

## Fourth Year - First Semester

- Gen-Ed Artistic and Creative Expression Credits: 3
- Concentration BUA 370 Credits: 3
- Concentration BUA Elective Credits: 3
- KPE 426 - Exercise Prescription and Leadership Credits: 3
- KPE 490 - Nutrition for Sports and Exercise Credits: 3

## Fourth Year - Second Semester

- Electives Credits: 4-7
- KPE 427 - Health Fitness Internship Credits: 3-6

Required Courses in Suggested Sequence for the B.S. in Kinesiology and Physical Education - Exercise Science (Sciences Option)

The following courses may be used to fulfill the additional 12-15 hours of laboratory sciences required for those looking towards post-graduate programs in allied health as part of the Exercise Science Option.

- KPE 303 - Pharmacology in Athletic Training Credits: 1
  - KPE 385 - Evaluation of Upper Extremity Injuries and Conditions Credits: 3
  - KPE 386 - Evaluation of Lower Extremity Injuries and Conditions Credits: 3
  - KPE 387 - Therapeutic Exercise for Musculoskeletal Injuries Credits: 4
  - KPE 388 - Therapeutic Modalities Credits: 4
  - KPE 389 - Aquatherapy Credits: 1
  - KPE 400 - General Medical Conditions and Disabilities in Sport Credits: 3
- Graduate Level courses may also be taken:
- KPE 560-Assessment & Evaluation of Human Performance 3 credits
  - KPE 575-Current Studies in KPE 3 credits
  - KPE 580-Human Biomechanics 3 credits
  - KPE 588-Advanced Exercise Physiology
  - KPE 588-Advanced Exercise Physiology 3 credits

### First Year - First Semester

- BIO 100 - Basic Biology Credits: 4
- Gen Ed Cultural Diversity and International Perspectives Credits: 3
- ENG 101 - College Composition Credits: 3
- EHD 100 - New Student Seminar in Education and Human Development Credits: 1
- Gen Ed Elective Credits: 3
- KPE 253 - Lifetime Fitness for Health Credits: 3

### First Year - Second Semester

- BIO 208 - Anatomy and Physiology Credits: 4
- KPE 270 - Motor Development and Learning Credits: 3
- Gen Ed-Quantitative Credits: 3 or 4
- PSY 100 - General Psychology Credits: 3
- Gen Ed Western Cultural Tradition Credits: 3

### Second Year - First Semester

- BMB 207 - Fundamentals of Chemistry Credits: 3  
and
- BMB 209 - Fundamentals of Chemistry Laboratory Credits: 1  
or
- CHY 121 - Introduction to Chemistry Credits: 3  
and
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- KPE 250 - Prevention and Care for Sports Injuries Credits: 3
- KPE 262 - Methods of Teaching Physical Activity Credits: 3

- KPE 372 - Statistical Methods and Assessments in Physical Education Credits: 3
- Elective Credits: 3

## Second Year - Second Semester

- Concentration Lab Science Credits: 4
- EDT 400 - Integrating Technology for Teaching and Learning Credits: 3
- Gen Ed ENG 317 Credits: 3
- KPE 273 - Anatomy and Pathologies of Injuries and Conditions Credits: 3
- KPE 376 - Kinesiology Credits: 3

## Third Year - First Semester

- Concentration Lab Science Credits: 4
- KPE 377 - Biomechanics Credits: 3
- KPE 378 - Physiology of Exercise Credits: 3
- PHY 111 - General Physics I Credits: 4
- Gen Ed Population and the Environment Credits: 3

## Third Year - Second Semester

- Concentration Lab Science Credits: 4
- Elective Credits: 3
- FSN 101 - Introduction to Food and Nutrition Credits: 3
- KPE 367 - Adapted Physical Education Credits: 3
- KPE 425 - Health Promotion and Disease Prevention Credits: 3

## Fourth Year - First Semester

- Gen Ed Artistic and Creative Expression Credits: 3
- Concentration Lab Science Credits: 4
- KPE 426 - Exercise Prescription and Leadership Credits: 3
- KPE 490 - Nutrition for Sports and Exercise Credits: 3

## Fourth Year - Second Semester

- Elective Credits: 2-5
- KPE 427 - Health Fitness Internship Credits: 3-6

## Secondary Education

## OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** A B- or better in all professional education classes is required.

**Other GPA requirements to graduate:** Students must have a minimum cumulative GPA of 2.75 to be eligible to apply for teacher candidacy and to student teach.

**Required Course(s) for fulfilling Capstone Experience:** 12 credits of EHD 491 for students in the Teaching Option or EHD 493 for students in the non-teaching option.

**Contact Information:** The Advising Center, 100 Shibles Hall, (207) 581-2412 or email the Advising Center at: [advisingcenter@maine.edu](mailto:advisingcenter@maine.edu)

The college's educator preparation programs emphasize a diverse liberal arts background and highly relevant professional training. The undergraduate teacher education programs are fully accredited by the National Council for Accreditation of Teacher Education (NCATE/CAEP) and approved by the State of Maine. 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.

In their second year of study students apply for teacher candidacy by submitting a portfolio (eFolio) that includes a transcript of their academic work to date which reflects a grade point average of at least 2.75, an analysis of one field experience in a 7-12 classroom, and documentation of passing the state required PRAXIS I examination. **NOTE:** As a State of Maine approved program, we will adhere to state certification requirements and adapt our program to meet changing state regulations. For example, students are now required to pass PRAXIS II prior to student teaching. For more information about the state required PRAXIS exam, visit <http://www.umaine.edu/edhd/acadprogs/praxis.htm>. 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 curriculum, a prelude to student teaching. During 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.

Secondary Education concentrations include: English, mathematics, world languages (i.e., French, Spanish), science (i.e., life or physical), and social studies.

## Professional Courses (Grade of B- or higher required)

In order to be admitted to Teacher Candidacy and upper level courses in education, students must complete the following prerequisite courses with a minimum grade of B-, and achieve an overall cumulative GPA of 2.75. Students must also fulfill all portfolio requirements, including passing Praxis I and documentation of the field experience.

- EDT 400 - Integrating Technology for Teaching and Learning Credits: 3
  - EHD 101 - The Art and Science of Teaching Credits: 3
  - EHD 202 - Education in a Multicultural Society Credits: 3
  - EHD 203 - Educational Psychology Credits: 3
  - PSY 224 - Psychology of Adolescence Credits: 3
- OR**
- CHF 433 - Adolescence Credits: 3

## Pre-Education Semester (Grade of B- or higher required)

These classes are taken upon admission to Teacher Candidacy; a grade of B- or higher is required in each.

- EHD 204 - Teaching and Assessing for Student Learning Credits: 3
- EHD 301 - Classroom-based Prevention and Intervention: Supporting Positive Behavior and Academic Achievement Credits: 3
- EHD 421 - Literacy Across the Curriculum Credits: 3 This course is NOT required for the English Specialization.
- SED 302 - Adapting Instruction for Students with Disabilities Credits: 3

## Student Teaching Internship Courses (Grade of B- or higher required)

Student must have a cumulative GPA of 2.5 in order to be eligible for the Student Teaching Internship. A grade of B- or higher is required in each class.

- EHD 491 - Full-Day Student Teaching (Secondary) Credits: 1 - 12
- EHD 493 - Alternative Practicum and Seminar in Education Credits: 3 - 6 \*
- EHD 498 - Seminar for Interns Credits: 1-3

\*Taken only if not student teaching

## Required Courses in Suggested Sequence for the B.S. in Secondary Education

Sequence varies based on concentration (i.e., English, mathematics, world languages, sciences, or social studies).

### First Year

- EHD 100 - New Student Seminar in Education and Human Development Credits: 1
- EHD 101 - The Art and Science of Teaching Credits: 3
- ENG 101 - College Composition Credits: 3
- PSY 100 - General Psychology Credits: 3
- Specialization Courses
- General Education Courses
- Take and pass Praxis I (must be done before applying for Teacher Candidacy)
- Fingerprinting (must be obtained prior to the Teacher Candidacy Field Experience)

### Second Year

- CHF 433 - Adolescence Credits: 3  
or
- PSY 224 - Psychology of Adolescence Credits: 3

- EDT 400 - Integrating Technology for Teaching and Learning Credits: 3
  - EHD 202 - Education in a Multicultural Society Credits: 3
  - EHD 203 - Educational Psychology Credits: 3
  - Specialization Courses
  - General Education Courses
- Apply for teacher candidacy--

## Third Year

Students must be accepted into Teacher Candidacy prior to taking the courses below.

- EHD 204 - Teaching and Assessing for Student Learning Credits: 3
  - EHD 301 - Classroom-based Prevention and Intervention: Supporting Positive Behavior and Academic Achievement Credits: 3
  - EHD 421 - Literacy Across the Curriculum Credits: 3 This course is NOT required for the English Specialization.
  - SED 302 - Adapting Instruction for Students with Disabilities Credits: 3
  - Specialization Courses
  - General Education Courses
- Fingerprinting must be obtained prior to applying for EHD 400 -  
--Take & Pass Praxis II prior to applying for EHD 491 --

## Fourth Year - Fall Semester

Methods courses in a Discipline Area are available FALL SEMESTER ONLY.

- EHD 400 - Field Observation (Activity) Credits: 1-6
  - Concentration Requirements. Credits 6-12
- Methods Courses:
- English Concentration: ERL 440, ERL 418, EHD 472 and EHD 400
- Social Studies Concentration: ESS 441, EHD 400
- Science Concentration (Life or Physical): ESC 452, EHD 400
- Math Concentration: MAT 305, EHD 400
- World Language Concentration: MLC 466, EHD 400

## Fourth Year - Spring Semester

- EHD 491 - Full-Day Student Teaching (Secondary) Credits: 1 - 12
- EHD 498 - Seminar for Interns Credits: 1-3

## English Specialization

A total of at least 42 credit hours are required. Students must have a minimum GPA of a 2.5 in their academic specialization to graduate.



## 1. Knowledge of Literature (18 total hours)

### A. Foundations of Literary Analysis

- ENG 170 - Foundations of Literary Analysis Credits: 3

### B. One genre-based course

(other than narrative fiction (e.g. a course based primarily on texts in genres such as drama, poetry, non-fiction, hypertext))

- ENG 222 - Reading Poems Credits: 3
- ENG 243 - Topics in Multicultural Literature Credits: 3
- ENG 245 - American Short Fiction Credits: 3
- ENG 249 - American Sports Literature and Film Credits: 3
- ENG 253 - Shakespeare: Selected Plays Credits: 3
- ENG 256 - British Women's Literature Credits: 3
- ENG 280 - Introduction to Film Credits: 3

### C. One course in multicultural or feminist literature

or based on a syllabus that is inclusive of a wide range of cultural, racial, and gender perspectives)

- ENG 237 - Coming of Age in America Credits: 3
- ENG 243 - Topics in Multicultural Literature Credits: 3
- ENG 246 - American Women's Literature Credits: 3
- ENG 341 - Colonial and Early National American Literature Credits: 3
- ENG 342 - Native American Literature Credits: 3
- ENG 471 - Literature, Gender, and Gender Theory Credits: 3 \*

\*Denotes Writing Intensive Course

### D. Two courses in historical or interdisciplinary literary studies

(these may be surveys of national literatures)

- ENG 231 - Western Tradition in Literature: Homer Through the Renaissance Credits: 3
- ENG 235 - Literature and the Modern World Credits: 3
- ENG 236 - Intro to Canadian Literature Credits: 3
- ENG 238 - Nature and Literature Credits: 3
- ENG 251 - English Literature Survey: Beginnings Through Neoclassicism Credits: 3
- ENG 336 - Canadian Literature Credits: 3
- ENG 343 - Nineteenth-Century American Literature Credits: 3
- ENG 351 - Medieval English Literature Credits: 3
- ENG 353 - Shakespeare and the English Renaissance Credits: 3

- ENG 355 - Restoration and Eighteenth-Century British Literature Credits: 3
- ENG 357 - Nineteenth-Century British Literature Credits: 3
- ENG 361 - Modernism Credits: 3
- ENG 363 - Literature of the Postmodern Period Credits: 3
- ENG 364 - Contemporary Literature Credits: 3
- ENG 382 - Major Genres in Historical Perspective Credits: 3
- ENG 440 - American Seminar Credits: 3 \*
- ENG 445 - The American Novel Credits: 3 \*

\*Denotes Writing Intensive Course

#### E. One elective literature course

- ENG 129 - Topics in English Credits: 3
- ENG 131 - The Nature of Story Credits: 3
- ENG 229 - Topics in Literature Credits: 3
- ENG 244 - Writers of Maine Credits: 3
- ENG 245 - American Short Fiction Credits: 3
- ENG 271 - The Act of Interpretation Credits: 3 \*

\*Denotes Writing Intensive Course

### 2. Knowledge of Language Development, History of Language, Grammar, Dialogues, Purposes of Language (3 hours with advisor's approval)

- EHD 472 - Workshop in Secondary Education (Activity) Credits: 1-6

### 3. Knowledge of Written and Oral Discourse 12 hours (6 written, 6 oral)

- Written: ENG 101 and one at the Intermediate level
- Oral discourse (6 credits)

(for example CMJ, 102, Interpersonal Communication; CMJ 103, Public Speaking; CMJ 106 Oral Interpretation)

### 4. Educational Technology/Media Literacy (non-print) 3 hours

(for example, EHD 400, Computers in Education; EDT 520 Technology Tools for K-12 Schools)

### 5. English Elective Coursework 6 hours at 300 level or higher

Methods Courses: English

- EHD 400 - Field Observation (Activity) Credits: 1-6 Must apply the semester prior to observation. Fingerprints are required at time of application.
- EHD 472 - Workshop in Secondary Education (Activity) Credits: 1-6
- ERL 440 - Teaching Reading in the Secondary School Credits: 3

All courses in this section are offered only in the Fall.

## World Languages Specialization

Students wishing to major in French or Spanish require a total of 30 credits hours above the intermediate level (i.e. at the 300 and 400 level); at least 18 credits must be at the 400 level. Students must have a minimum GPA of a 2.5 in their academic specialization to graduate. In addition, all world language students are required to take INT 410: Linguistics. Coursework will be taken in the following areas: applied skills in the language, literature, linguistics, and culture. If students enter college with some degree of language proficiency, they are required to take the placement test administered by the Department of Modern Languages and Classics prior to enrolling in a language class.

### Specialization in French (Required Courses):

- FRE 305 - French Conversation and Composition I Credits: 3  
**OR**
- FRE 306 - French Conversation and Composition II Credits: 3
  
- FRE 309 - Readings in French Literature Credits: 3  
**OR**
- FRE 310 - Readings in Francophone Literature Credits: 3
  
- FRE 320 - French Pronunciation Credits: 3
  
- FRE 397 - French (May Term) Credits: 3  
**OR**
- FRE 398 - French Immersion: Western France Credits: 3
  
- FRE 400 - Advanced French Grammar Credits: 3
- INT 410 - (ANT, ENG, MLC) Introduction to the Study of Linguistics Credits: 3

### Other courses

In addition to the courses above, students can fulfill the remaining French credits by taking any of the other courses offered in the Department of Modern Languages and Classics.

Note: The French capstone for Secondary Education/French majors is voluntary and may be substituted with any 400-level French course. Highly recommended, but not required: HTY 105, HTY 106 (History of European Civilization I and II) and HTY 460 (Modern Canada).

## Specialization in Spanish (Required Courses):

- SPA 305 - Applied Spanish Credits: 3
- SPA 307 - Readings in Peninsular Literature Credits: 3  
**OR**
- SPA 308 - Readings in Spanish American Literature Credits: 3
- INT 410 - (ANT, ENG, MLC) Introduction to the Study of Linguistics Credits: 3

## Other courses

In addition to the above courses, students can choose the remaining credits of Spanish from any of the other courses offered in the Department of Modern Languages and Classics.

Note: The French capstone for Secondary Education/French majors is voluntary and may be substituted with any 400-level French course. Highly recommended, but not required: HTY 105 and HTY 106 (History of European Civilization I and II), HTY 110 (Introduction to Modern Latin America) and an immersion or study abroad experience in a Spanish-speaking country.

## Methods Courses: World Languages

- MLC 466 - The Teaching of Modern Languages Credits: 3
- EHD 400 - Field Observation (Activity) Credits: 1-6  
Must apply the semester prior to observation. Fingerprints are required at time of application.

## Mathematics Specialization

A total of at least 45 credit hours are required. Students must have a 2.5 in their academic specialization to graduate.

## Courses

The following courses require a C or higher: MAT 126, 127, 228, 261, 262

- MAT 126 - Calculus I Credits: 4
- MAT 127 - Calculus II Credits: 4
- MAT 228 - Calculus III Credits: 4
- MAT 261 - Introduction to Abstract Mathematics Credits: 3
- MAT 262 - Linear Algebra Credits: 3
- STS 434 - Introduction to Statistics Credits: 4
- MAT 445 - History of Mathematics Credits: 3  
Spring semester only
- MAT 463 - Introduction to Abstract Algebra I Credits: 3  
Fall semester only

- MAT 471 - Differential Geometry Credits: 3  
**OR**
- MAT 475 - Higher Geometry Credits: 3
  
- MAT 481 - Discrete Mathematics Credits: 3  
Fall semester only  
**OR**
- COS 250 - Discrete Structures Credits: 3

### Computer Science Course (Choose one)

- COS 120 - Introduction to Programming I Credits: 3
- COS 220 - Introduction to C++ Programming Credits: 3
- COS 221 - Data Structures in C++ Credits: 3

### Math Electives (two required)

Recommended Math Electives:

- MAT 300 - Topics in Mathematics Credits: 1-3
- MAT 400 - Topics in Mathematics Credits: 1-3
- MAT 425 - Introduction to Real Analysis I Credits: 3  
(needed for Math double major)
- MAT 465 - Theory of Numbers Credits: 3

Note: One Intensive Writing course must be an English course

### Methods Courses: Mathematics

- EHD 400 - Field Observation (Activity) Credits: 1-6 Must apply the semester prior to observation. Fingerprints are required at time of application.
- MAT 305 - Mathematics for Secondary School Teachers Credits: 3

### Science Specializations: Life Sciences

A total of at least 50 credit hours are required. Students must have a minimum GPA of a 2.5 in their academic specialization to graduate. All students in secondary life sciences education must complete the General Requirements, and then select one concentration (general biology, natural history and ecology, or aquatic and marine ecology).

### General Requirements:

- General Biology

- Organic Chemistry
- Anatomy and Physiology
- Botany
- Ecology
- Genetics and Evltn
- Intro to Chemistry:  
CHY 121/123  
CHY 122/124
- Mathematics: MAT 232

### Option 1: General Biology Concentration

- Biochemistry: BMB 322
- Field Biology
- Intro to Physics
- Microbiology: BMB 300
- Elective (Sci.)

### Option 2: Natural History and Ecology Concentration

- Biodiversity
- Ecosystems
- Environmental Geol.
- Fld Ecol/Nat Hist
- Elective (Sci.)

### Option 3: Aquatic and Marine Ecology Concentration

- Aquatic Biology
- Marine Ecology
- Biol - Verts
- Biol - Inverts: Bio 353
- Field Marine Bio.
- Elective (Sci.)

### Methods Courses: Life Sciences

- EHD 400 - Field Observation (Activity) Credits: 1-6 Must apply the semester prior to observation. Fingerprints are required at time of application.
- ESC 452 - Teaching Science in the Secondary School Credits: 3

### Science Specializations: Physical Sciences

A total of at least 50 credit hours are required. Students must have a minimum GPA of a 2.5 in their academic specialization to graduate. All students in secondary physical science education must complete the General Requirements, and then select one concentration (chemistry, earth science, or physics).

## General Requirements (27 credits)

- CHY 121 - Introduction to Chemistry Credits: 3
- CHY 122 - The Molecular Basis of Chemical Change Credits: 3
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- CHY 124 - The Molecular Basis of Chemical Change Laboratory Credits: 1
- MAT 126 - Calculus I Credits: 4
- MAT 127 - Calculus II Credits: 4
- STS 232 - Principles of Statistical Inference Credits: 3
- PHY 111 - General Physics I Credits: 4
- PHY 112 - General Physics II Credits: 4

## Option 1: Chemistry Concentration (must be at least 23 credits)

- CHY 242 - Principles of Quantitative Analysis and Solution Equilibria Credits: 5
- CHY 251 - Organic Chemistry I Credits: 3
- CHY 252 - Organic Chemistry II Credits: 3
- CHY 471 - Physical Chemistry I Credits: 3
- Chemical Elective #1
- Chemical Elective #2
- MAT 228 - Calculus III Credits: 4

## Option 2: Earth Science Concentration (must be at least 23 credits)

- AST 109 - Introduction to Astronomy Credits: 3
- ERS 101 - Introduction to Geology Credits: 4
- ERS 240 - The Atmosphere Credits: 4
- ERS 330 - Mineralogy Credits: 4
- Geol-N.America
- Earth Processes
- Earth History
- Elective (Sci)

## Option 3: Physics Concentration (must be at least 23 credits)

- MAT 228 - Calculus III Credits: 4
- MAT 259 - Differential Equations Credits: 3
- PHY 236 - Introductory Quantum Physics Credits: 3
- PHY 238 - Mechanics Credits: 3
- Physics Elective #1
- Physics Elective #2
- Physics Elective #3

## Methods Courses: Physical Sciences

- EHD 400 - Field Observation (Activity) Credits: 1-6 Must apply the semester prior to observation. Fingerprints are required at time of application.
- ESC 452 - Teaching Science in the Secondary School Credits: 3

## Social Studies Specialization

A total of at least 45 credit hours required. Students must have a 2.5 in their academic specialization to graduate.

- ANT 101 - Introduction to Anthropology: Human Origins and Prehistory Credits: 3  
**or**
- ANT 102 - Introduction to Anthropology: Diversity of Cultures Credits: 3  
(ANT 101 or 102 meets the Gen Ed requirement for Cultural Diversity & International Perspectives)
  
- HTY 103 - United States History I Credits: 3
- HTY 104 - United States History II Credits: 3
- HTY 105 - History of Ancient and Medieval Europe Credits: 3
- HTY 106 - History of Modern Europe Credits: 3  
(HTY 103-106 meets the Gen Ed requirement for Western Cultural Tradition)
  
- ECO 100 - Intro to Economics Credits: 3  
**or**
- ECO 120 - Principles of Microeconomics Credits: 3  
**or**
- ECO 121 - Principles of Macroeconomics Credits: 3
  
- POS 100 - American Government Credits: 3
- SOC 101 - Introduction to Sociology Credits: 3

## Specialization

A minimum of 9 credit hours at the 300-level or above selected from **one** of the following areas:

- Anthropology (ANT)
- History (HTY)
- Economics (ECO)
- Government/Political Science (POS)

## Social Studies

A minimum of 9 credit hours required at the 300-level or above, choosing from any of the following areas:



- Anthropology (ANT)
- History (HTY)
- Government/Political Science (POS)
- Economics

You must have a minimum of 24 hours in History, Economics, Government/Political Science or Anthropology to be Highly Qualified

**Note: One Intensive Writing course must be an English course**

### Methods Courses: Social Studies

- EHD 400 - Field Observation (Activity) Credits: 1-6 Must apply the semester prior to observation. Fingerprints are required at time of application.
- ESS 441 - Teaching Social Studies in the Secondary School Credits: 3

## Minor

### Minor: Child Development and Family Relations

#### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** 2.0

**Minimum Grade requirements for courses to count toward minor:** A grade of C or better in CHF 200 and CHF 201.

**Contact Information:** Mary Mahoney-O'Neil, Assistant Dean, 144 Shibles Hall 581-2484 or 581-2435

The minor in Child Development/Family Relations consists of CHF 200, CHF 201, and 12 additional credits of CHF courses, 9 of which must be taken at UMaine. 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. Applications are available in 118 Merrill Hall.

#### Required Courses:

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

# Minor: Education

## OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** 2.75

**Minimum Grade requirements for courses to count toward minor:** A grade of B- or better in all education courses.

**Contact Information:** The Advising Center, 100 Shibles Hall, (207) 581-2412 or email the Advising Center at: [advisingcenter@maine.edu](mailto:advisingcenter@maine.edu)

The College of Education and Human Development offers an 18-credit minor in 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 in the Advising Center (Room 101 Shibles Hall) and are accepted throughout the academic year. Application requirements include the following elements:

- A cumulative GPA of 2.5 or better,
- Successful completion of EHD 201 - Education in a Multicultural Society, EHD 203 - Educational Psychology, and an education related elective,
- A grade of B- or better in all education courses,
- Statement addressing your reasons for pursuing the minor, and
- Formal 2-page application.

The optimal time to apply for a minor is during the second semester of sophomore year of study.

## Tier I: Courses to be taken prior to application for the minor (9 credits)

- EHD 202 - Education in a Multicultural Society Credits: 3
- EHD 203 - Educational Psychology Credits: 3
- One education related elective (see examples below)

## Tier II: Courses to complete the minor (9 credits)

- SED 302 - Adapting Instruction for Students with Disabilities Credits: 3
- One education related elective (see examples below)

## Examples of Education Related Electives

- CHF 201 - Introduction to Child Development Credits: 3
- CHF 433 - Adolescence Credits: 3
- EHD 492 - Problems in Education Credits: Ar
- EDT 400 - Integrating Technology for Teaching and Learning Credits: 3
- EHD 462 - Workshop in Elementary Education (Activity) Credits: 1-6
- EHD 472 - Workshop in Secondary Education (Activity) Credits: 1-6
- PSY 224 - Psychology of Adolescence Credits: 3

## Minor: English as a Second Language (ESL)

# OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 18

**Minimum Cumulative GPA required to graduate:** 2.67 (B-)

**Minimum Grade requirements for courses to count toward major:** Students must earn a minimum grade of B- (2.67) or better in ELL 470, ELL 475, ELL 480 and ELL 485.

**Contact Information:** Mary Mahoney-O'Neil, Assistant Dean, 144 Shibles Hall 581-2484 or 581-2435

Note: if a student is pursuing an ESL area of specialization for the B.S. degree in Elementary Education, they cannot also obtain an ESL minor.

A minor in English as a Second Language (ESL) would provide students with the opportunity to explore this unique population and examine diversity, language acquisition, and culture differences. In addition to studying the ESL field, the minor also provides students with the required coursework to receive endorsement 660 from the Maine Department of Education in ESL, after successful completion of the minor coursework and the ESL Praxis 2 exam.

The English as a Second Language (ESL) minor is offered through the College of Education and Human Development and consists of 18 credits distributed among ESL courses (12 credits), a multicultural course (3 credits) and an elective course (3 credits). Students must earn a minimum grade of B- (2.67) or better in ELL 470, ELL 475, ELL 480 and ELL 485 and the overall GPA for the 18 credit ESL minor must average a B- (2.67). If a student is pursuing an ESL area of specialization for the B.S. degree in Elementary Education, they cannot also obtain an ESL minor.

### Required ESL Courses (12 credits):

- ELL 470 - The Teaching of English As A Second Language Credits: 3
- ELL 475 - Curriculum Development in English As A Second Language/English As A Foreign Language Contexts Credits: 3
- ELL 480 - Testing and Assessment in English As A Second Language/English As A Foreign Language Contexts Credits: 3
- ELL 485 - Applied Linguistics and Second Language Acquisition Principles for ESL/EFL Teachers Credits: 3

### Required Multiculturalism Course (3 credits):

- EHD 202 - Education in a Multicultural Society Credits: 3
- EHD 425 - Field Experience: Urban and Rural Education Credits: 3
- EHD 491 - Full-Day Student Teaching (Secondary) Credits: 1 - 12

### Required Elective Course (3 credits):

- ANT 102 - Introduction to Anthropology: Diversity of Cultures Credits: 3
- ANT 300 - Basic Theory in Cultural Anthropology Credits: 3
- CHF 331 - Cognitive Development Credits: 3
- CSD 381 - Later Language Development Credits: 3
- DIS 300 - Disability: Interaction of Human Diversity and Global Environment Credits: 3
- INT 410 - (ANT, ENG, MLC) Introduction to the Study of Linguistics Credits: 3
- PSY 230 - Social Psychology Credits: 3
- PSY 425 - Social Issues in Developmental Psychology Credits: 3
- SOC 201 - Social Inequality Credits: 3
- SWK 330 - Contemporary Issues in Diversity and Pluralism Credits: 3
- SWK 350 - Human Behavior and the Social Environment I Credits: 3

## Minor: Exercise Science

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor: 18**

**GPA requirements to earn minor: 2.5**

**Minimum Grade requirements for courses to count toward minor: None.**

**Contact Information:** Mary Mahoney-O'Neil, Assistant Dean, 144 Shibles Hall, 581-2484 or 581-2435.

The minor in Exercise Science (for non-KPE majors) 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.

### Complete the following required courses:

- KPE 270 - Motor Development and Learning Credits: 3
- KPE 376 - Kinesiology Credits: 3
- KPE 378 - Physiology of Exercise Credits: 3
- KPE 490 - Nutrition for Sports and Exercise Credits: 3

Also choose 2 of the following courses:

- KPE 377 - Biomechanics Credits: 3
- KPE 425 - Health Promotion and Disease Prevention Credits: 3
- KPE 426 - Exercise Prescription and Leadership Credits: 3

## **Minor: Outdoor Education**

### **OVERVIEW OF DEGREE REQUIREMENTS**

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** 2.0

**Minimum Grade requirements for courses to count toward minor:** None.

**Contact Information:** Jan Kristo, 141 Shibles Hall, 581-2448

Complete the following Required Courses:

- KPE 209 - Wilderness First Responder Credits: 3
- KPE 280 - Introduction to Paddle Sports Credits: 3
- KPE 285 - Climbing Wall Instructor Credits: 3
- KPE 286 - Challenge Course Facilitator Skills Credits: 3
- KPE 311 - Maine Wilderness Guide Credits: 3
- KPE 384 - Practicum in Kinesiology and Physical Education Credits: 1-3  
(Students must take 3 credits of KPE 384)

# 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, internships and industry.
- 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 Engineering Technology  
Electrical Engineering  
Electrical Engineering Technology  
Engineering Physics  
Mechanical Engineering  
Mechanical Engineering Technology  
Surveying Engineering Technology

### *Minors:*

Biomedical Engineering  
Computer Engineering  
Construction Engineering Technology  
Electrical Engineering

Electrical Engineering Technology  
Engineering Entrepreneurial  
Engineering Leadership and Management  
Mechanical Engineering Technology  
Military Science and Leadership  
Naval Science  
Ocean and Marine Engineering  
Power  
Process Engineering  
Robotics  
Surveying Engineering Technology

### **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:* It is required that engineering and technology students carefully select these electives so that an ethics elective is included within the 18 credits required. Civil and Environmental Engineering majors satisfy the ethics requirement by taking the required CIA 410 - Engineering Ethics.

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

*Writing Competency:* Writing intensive courses are designated within each major. For most engineering and technology majors, technical writing is the second required writing intensive.

*Ethics:* The only approved engineering ethics course is CIE 410 - Engineering Ethics. CIE 410 is required of civil and environmental engineering majors, however, other majors must select a Human Values and Social Context (HVSC) elective that also qualifies as an ethics elective, such as ISE 213.

*Senior Capstone Experience:* Students are required to complete a capstone experience within the major.

### **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.

#### **Engineering Leadership and Management Minor**

Most engineering graduates will find themselves in a leadership position at some point during their career. In order to prepare for this eventually we encourage our undergraduate students to pursue a minor in Engineering Leadership and Management.

#### **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 typically do not fulfill the requirements for BS engineering program.

#### **Pass/Fail:**

Students enrolled in the College of Engineering may not take a course (except courses only offered as pass/fail) 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.

### **Program Contacts**

#### *Biological Engineering*

Hemant Pendse  
117 Jenness Hall  
581-2283  
pendse@maine.edu

#### *Chemical Engineering*

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#### *Civil and Environmental Engineering*

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#### *Computer Engineering*

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#### *Construction Management Technology*

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#### *Electrical Engineering*

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#### *Electrical Engineering Technology*

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#### *Engineering Physics*

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*Information - Engineering Programs*

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*Information - Engineering Technology Programs*

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*Mechanical Engineering*

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*Mechanical Engineering Technology*

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*Surveying Engineering Technology*

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125 Boardman Hall  
581-2189  
raymond.hintz@umit.maine.edu

## Major

## Bioengineering

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 132

**Minimum Cumulative GPA required to graduate:** 2.0.

**Minimum Grade requirements for courses to count toward major:** None.

**Other GPA requirements to graduate:** A cumulative GPA not less than 2.0 in BLE and CHB courses.

**Other Requirements:** Entrance into the Bioengineering program requires that students have a PC-compatible laptop computer capable of running Microsoft Office®, Mathcad®, and Labview®.

**Required Course(s) for fulfilling Capstone Experience:** CHB 479

**Contact Information:** Hemant Pendse, Chair, 115 Jenness Hall, 501-2290 pendse@maine.edu

The mission of the Bioengineering program reflects the mission of Maine's Land Grant University, specifically to provide teaching, research and public service in the discipline of Bioengineering. The goal of the Bachelor of Science program is to prepare students for employment or graduate education in fields associated with clinical, therapeutic, and diagnostic applications of Bioengineering. Students are given high quality undergraduate engineering instruction directed toward the instrumentation and techniques employed to analyze biological systems and processes, the challenges and methodologies associated with manipulating biological systems, and the current and future applications of Bioengineering. The program educational objectives are that in the time frame of three to five years after graduation our students will:

- Hold positions that utilize their engineering training and have advanced in their job responsibilities, or be pursuing postgraduate education.
- Be working as engineering professionals, act ethically by adhering to standards and being committed to the health and safety of employees and the general population.
- Be pursuing innovative solutions to current societal challenges and continue to improve themselves through a variety of learning opportunities.
- Contribute to their employer and society by working effectively in the global economy, contribute to professional, civic, or governmental organizations, be leading or working collaboratively in teams, and be communicating with diverse groups.

#### **Program Description**

The field of Bioengineering encompasses a broad range of topics, all of which focus on the interface between biology and engineering. Bioengineers use engineering skills to design devices or develop methods that interface with biological systems to benefit society. For example, Bioengineers might be involved in the design of artificial organs, development of new methods to detect or treat cancer, production of devices to measure biological agents, or formulation of materials for the controlled release of drugs. Bioengineers work at the forefront of research and industry and frequently address clinical, diagnostic, and therapeutic applications of engineering. Students entering UMaine's Bioengineering B.S. program typically have a strong interest in science and problem solving. The curriculum provides thorough training in the fundamentals of engineering, mathematics and science, combined with additional elective coursework in engineering, humanities, and social sciences. Employing this knowledge base, students develop the skills to engineer solutions to real world problems. Additional information about the program is available on our website.

Bioengineering majors interested in production of biofuels, biopharmaceuticals and biopolymers may take advantage of a Bioprocess Engineering Concentration. Additionally, UMaine's College of Engineering offers a Biomedical Engineering Minor, a five-year BS-MBA degree with the Maine Business School, as well as a minor in Engineering Leadership and Management.

Students intending to apply for admission to Medical School may consider completing a Minor in Pre-Medical Studies. Minimal coursework in addition to the Bioengineering curriculum is required. For more details see [http://catalog.umaine.edu/preview\\_program.php?catoid=51&pooid=4623&returnto=1099](http://catalog.umaine.edu/preview_program.php?catoid=51&pooid=4623&returnto=1099)

Degrees are awarded upon satisfactory completion of 132 credits with a cumulative grade point average of not less than 2.0 in Bioengineering (BLE/CHB) courses.

#### **Summer Internships, Undergraduate Research Experiences, and the Cooperative Work Experience Program Option in Bioengineering**

UMaine faculty members help students obtain summer internships in leading research and diagnostics development laboratories throughout New England. Internships with these companies and research institutions typically take place in the junior and senior years of the program.

Students are encouraged to undertake undergraduate research experiences in the laboratories of the department faculty. UMaine Bioengineering professors are all highly active and accomplished researchers. Research projects have included the development of nanoprobes for detection and imaging of cancer; creation of model cellular membranes for the study of membrane-protein

interactions, molecular biosensors for detecting pathogens and toxins, and improving tissue-implant compatibility. Undergraduates are encouraged to participate in projects such as these to gain hands-on experience in the field, either for course credit, or as paid employees.

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 involves two fourteen-week sessions of paid, supervised professional experience as a junior engineer. The Co-Op sessions are typically scheduled during alternating semesters of the third year with a semester of coursework between the sessions. Students are able to participate in the Co-Op experience and still graduate in four years by scheduling coursework during a summer term. Participating students must register for six credits which, in general, cannot be substituted for the courses required for the BS degree.

### **Employment Opportunities**

The B.S. degree is suitable for entry-level engineering careers and as preparation for graduate-level study in engineering or scientific disciplines. The degree also serves as an excellent foundation for admission to medical degree programs. For students who wish to pursue advanced postgraduate studies in this area, UMaine also offers a Master of Science degree in Biological Engineering, in addition to a Ph.D. in Biomedical Engineering through the Graduate School of Biomedical Sciences <http://gsbs.umaine.edu/>

### **Computers**

Students entering the Bioengineering program are required to have a PC-compatible laptop computer capable of running Microsoft Office®, Mathcad®, and Labview®. Visit the departmental website for recommended configuration details.

### **Scholarships**

Many Bioengineering undergraduates enjoy some degree of scholarship support. The following scholarships are offered on a competitive basis:

Howard D. Bartlett '44 and Phyllis White Bartlett '45 Scholarship  
Charles A. Brautlecht Scholarship  
Eileen M. Byrnes Scholarship  
Louis Calder Foundation Scholarship  
Richard E. Durst Scholarship  
S.T. Han Memorial Scholarship  
Thomas G. Mangan and John W. Mangan Scholarship  
Omar F. and Lenora L. Tarr Memorial Scholarship

## **Required Courses in Suggested Sequence for the B.S. in Bioengineering**

The recommended sequence of the four-year curriculum is outlined below. Under special circumstances course sequencing may be adapted to a student's scheduling needs in consultation with their academic advisor.

### **First Year - First Semester**

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

## First Year - Second Semester

- BMB 280 - Introduction to Molecular and Cellular Biology Credits: 3
- CHB 112 - Introduction to Chemical Engineering and Bioengineering II Credits: 2
- CHY 122 - The Molecular Basis of Chemical Change Credits: 3
- CHY 124 - The Molecular Basis of Chemical Change Laboratory Credits: 1
- MAT 127 - Calculus II Credits: 4
- PHY 122 - Physics for Engineers and Physical Scientists II Credits: 4

## Second Year - First Semester

- BLE 201 - Fundamentals of Bioengineering Credits: 4
- CHY 251 - Organic Chemistry I Credits: 3
- CHY 253 - Organic Chemistry Laboratory I Credits: 2
- MAT 228 - Calculus III Credits: 4
- Human Values and Social Context Elective 1 Credits: 3

## Second Year - Second Semester

- BIO 208 - Anatomy and Physiology Credits: 4
- BLE 202 - Transport Processes in Biological Systems Credits: 4
- CHY 252 - Organic Chemistry II Credits: 3
- MAT 258 - Introduction to Differential Equations with Linear Algebra Credits: 4
- Human Values and Social Context Elective 2 Credits: 3

## Third Year - First Semester

- BLE 401 - Applications of Bioengineering Credits: 3
- BLE 402 - Biomaterials and the Cellular Interface Credits: 3
- BMB 300 - General Microbiology Credits: 3
- BMB 305 - General Microbiology Laboratory Credits: 2
- Technical Elective 1 Credits: 3
- Human Values and Social Context Elective 3 Credits: 3

## Third Year - Second Semester

- BLE 403 - Instrumentation in Bioengineering Credits: 4
- BMB 322 - Biochemistry Credits: 3
- BMB 323 - Biochemistry Laboratory Credits: 2
- CHB 350 - Statistical Process Control and Analysis Credits: 3
- CHB 361 - Chemical Engineering and Bioengineering Laboratory I Credits: 3
- ECE 209 - Fundamentals of Electric Circuits Credits: 3

## Fourth Year - First Semester

- CHB 363 - Chemical Engineering and Bioengineering Laboratory II Credits: 3
- CHB 477 - Elements of Chemical Engineering and Bioengineering Design Credits: 3
- CHB 493 - Chemical Engineering and Bioengineering Seminar Credits: 0-1
- MEE 252 - Statics and Strength of Materials Credits: 3
- Human Values and Social Context elective 4 Credits: 3
- Technical Elective 2. Credits: 3

## Fourth Year - Second Semester

- CHB 479 - Chemical Engineering and Bioengineering Design Projects Credits: 4
- CHB 493 - Chemical Engineering and Bioengineering Seminar Credits: 0-1
- Human Values and Social Context Elective 5 Credits: 3
- Human Values and Social Context Elective 6 Credits: 3
- Technical Elective 3 Credits 3

## Special Requirements

Engineering Credits (minimum of 48 credits):

The program requires a minimum of 48 credits in engineering topics. Courses with engineering program designators meet this criterion. For students following the recommended curriculum (eg non-transfer students) these credits may be met by taking 3 of the 9 required technical elective credits within an engineering topic.

Approved Technical Electives (9 credits):

The program requires 9 credits of technical elective courses. These courses may be selected from a list of pre-approved 300, 400, and 500 level courses offered within science and engineering programs; a list of pre-approved courses may be found at [http://www.umche.maine.edu/chb/undergrad/Technical\\_Electives\\_and\\_Advanced\\_Chemistry.pdf](http://www.umche.maine.edu/chb/undergrad/Technical_Electives_and_Advanced_Chemistry.pdf) . Students may select alternate courses with approval of the Curriculum Committee of the Department of Chemical and Biological Engineering.

Course Equivalency:

Students may substitute MAT 332 Statistics for Engineers, for CHB 350 Statistical Process Control and Analysis. However, the total minimum credits of engineering topics (48 credits) must be satisfied, for example through judicious use of technical electives.

## Ethics

The course sequence CHB 111, CHB 477, CHB 479 and CHB 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 Human Values and Social Context electives.

## Fundamentals of Engineering Examination

Students are encouraged to take the FE examination.

# Chemical Engineering

## OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 130

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** None.

**Other GPA requirements to graduate:** A cumulative GPA not less than 2.0 in CHE/CHB courses including technical electives.

**Other Requirements:** Entrance into the Chemical Engineering program requires that students have a PC-compatible laptop computer capable of running Mathcad ©, Microsoft Office © and Aspen ©.

**Required Course(s) for fulfilling Capstone Experience:** CHB 479

**Contact Information:** Hemant Pendse, Chair, 115 Jenness Hall, 581-2290 pendse@maine.edu

The mission of the Chemical Engineering program reflects the mission of Maine's Land Grant University, specifically to provide teaching, research and public service in the discipline of chemical engineering. The goals of the program are to provide a high quality educational program 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. The program educational objectives are to provide graduates with:

- a sound foundation in the principles of chemical engineering and an understanding of the scientific principles on which chemical engineering is based.
- engineering problem solving skills enabling them to pursue careers in industry, government agencies, consulting firms, educational institutions, business, law, and medicine.
- a broad understanding of the chemical engineering profession provided by practical training and cooperative education opportunities.
- an awareness of their moral, ethical, legal, and professional obligations to hold paramount the safety, health, and welfare of the public.
- the ability to function effectively in the workplace through teamwork and effective communication of technical and professional information.
- the ability to use modern computer tools, including advanced process simulation programs, and apply them to solve chemical engineering problems.
- an appreciation of the necessity for and the ability to engage in lifelong learning.

Chemical Engineers design, operate and manage processes that transform raw materials into valuable products. In the design and operation of such facilities the two competing concerns are maximizing profits while minimizing environmental impact. Since chemical engineers are employed in many different industries, the basic training is general and not industry-specific.

## Program Description

The program provides a broad base of knowledge for engineering practice in today's society. The curriculum includes core courses in engineering, mathematics and science combined with electives in engineering, humanities, and social sciences. The engineering courses follow the "process engineering" approach. The required courses cover both the scientific foundations of the subject and the relevant engineering sciences such as stoichiometry, thermodynamics, kinetics, fluid mechanics and unit operations. Economics and process design are learned in the senior year. Technical electives in the junior and senior years give students the opportunity to gain specialized knowledge in areas of interest. Additional information about the program is available on the Web at <http://www.umche.maine.edu/chb/>

Chemical Engineering majors interested in production of biofuels, biopharmaceuticals and biopolymers may take advantage of a Bioprocess Engineering Concentration. Additionally, UMaine's College of Engineering offers a Biomedical Engineering Minor, a five-year BS-MBA degree with the Maine Business School, as well as a minor in Engineering Leadership and Management.

Students intending to apply for admission to Medical School may consider completing a Minor in Pre-Medical Studies. Coursework in addition to the Chemical Engineering requirements is required. Some of these courses can be used to fulfill the technical elective requirements. For more details on the Pre-Medical Minor see [http://catalog.umaine.edu/preview\\_program.php?catoid=51&pooid=4623&returnto=1099](http://catalog.umaine.edu/preview_program.php?catoid=51&pooid=4623&returnto=1099)

The undergraduate program prepares students for immediate employment as well as graduate and professional studies. The degrees of Master of Science (Chemical Engineering) and Doctor of Philosophy (Chemical Engineering) are also offered in the Department. Several assistantships are available. The program is described in the University of Maine Graduate School online Catalog and on the Web.

Degrees are awarded upon satisfactory completion of 130 credits with a cumulative grade point average of not less than 2.0 and a cumulative grade point average in Chemical Engineering courses, including technical electives, of not less than 2.0. The program in Chemical Engineering is accredited by the Engineering Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012 - telephone: (410) 347-7700.

### **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 involves two fourteen-week sessions of paid, supervised professional experience as a junior engineer. The Co-Op sessions are typically scheduled during alternating semesters of the third year with a semester of coursework between the sessions. Students are able to participate in the Co-Op experience and still graduate in four years by scheduling one of the third-year semesters of coursework during a summer term. Participating students must register for six credits but, in general, these cannot be substituted for the courses required for the BS degree. Students who do 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. This 200-level course is allowed to satisfy a technical elective requirement for those students.

### **Employment Opportunities**

Chemical Engineering graduates find employment in all the major process industries: petroleum refining, petrochemicals, commodity chemicals, pharmaceuticals, polymers, 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.

### **Computers**

Students entering the Chemical Engineering program are required to have a PC-compatible laptop computer capable of running Mathcad ©, Microsoft Office, and Aspen. Visit our website for recommended configuration details.

### **Scholarships**

Many Chemical Engineering undergraduates enjoy some degree of scholarship support. The following scholarships are offered on a competitive basis:

Charles A. Brautlecht Scholarship

Eileen M. Byrnes Scholarship

Louis Calder Foundation Scholarship

Richard E. Durst Scholarship  
S.T. Han Memorial Scholarship  
Thomas G. Mangan and John W. Mangan Scholarship  
Omar F. and Lenora L. Tarr Memorial Scholarship  
Les Trois Amis Scholarship

In addition, the University of Maine Pulp and Paper Foundation supports undergraduate students with full tuition scholarships. Entry scholarships are offered to competitive first-year students based on their high school records. For more information about the opportunities, contact the University of Maine Pulp and Paper Foundation online or call 207-581-2297.

## Required Courses in Suggested Sequence 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 Department of Chemical and Biological 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 Engineering and Bioengineering I Credits: 2
- CHY 121 - Introduction to Chemistry Credits: 3  
**with**
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- MAT 126 - Calculus I Credits: 4
- PHY 121 - Physics for Engineers and Physical Scientists I Credits: 4
- Human Values and Social Context Elective 1 Credits:3

### First Year - Second Semester

- CHB 112 - Introduction to Chemical Engineering and Bioengineering II Credits: 2
- CHY 122 - The Molecular Basis of Chemical Change Credits: 3  
**with**
- CHY 124 - The Molecular Basis of Chemical Change Laboratory Credits: 1
- MAT 127 - Calculus II Credits: 4
- PHY 122 - Physics for Engineers and Physical Scientists II Credits: 4
- ENG 101 - College Composition Credits: 3

### Second Year - First Semester



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

## Second Year - Second Semester

- CHB 350 - Statistical Process Control and Analysis Credits: 3
  - CHE 385 - Chemical Engineering Thermodynamics I Credits: 3
  - CHY 252 - Organic Chemistry II Credits: 3
  - ECE 209 - Fundamentals of Electric Circuits Credits: 3  
**or**
  - PPA 264 - Introduction to the Pulp and Paper Industry<sup>1</sup>
  - MAT 258 - Introduction to Differential Equations with Linear Algebra Credits: 4
  - Human Values and Social Context Elective 3 Credits: 3
- <sup>1</sup>Students who are Co-oping in pulp and paper related industry should take PPA 264 as a technical elective in place of ECE 209 in the fourth term of the program. They should take ECE 209 in place of one of the technical electives later in the program.

## Third Year - First Semester

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

## Third Year - Second Semester

- CHB 361 - Chemical Engineering and Bioengineering Laboratory I Credits: 3
- CHE 362 - Elements of Chemical Engineering II Credits: 4

- CHE 368 - Kinetics and Reactor Design Credits: 3
- CHY 472 - Physical Chemistry II Credits: 3
- Technical Elective 1 Credits: 3

## Fourth Year - First Semester

- CHB 363 - Chemical Engineering and Bioengineering Laboratory II Credits: 3
- CHB 493 - Chemical Engineering and Bioengineering Seminar Credits: 0-1
- CHB 477 - Elements of Chemical Engineering and Bioengineering Design Credits: 3
- CHE 478 - Analysis, Simulation and Synthesis of Chemical Processes Credits: 3
- Human Values and Social Context Elective 4 Credits: 3
- Technical Elective 2 Credits: 3

## Fourth Year - Second Semester

- CHB 493 - Chemical Engineering and Bioengineering Seminar Credits: 0-1
- CHB 479 - Chemical Engineering and Bioengineering Design Projects Credits: 4
- Human Values and Social Context Elective 5 Credits 3
- Human Values and Social Context Elective 6 Credits 3
- Technical Elective 3 Credits:3

## Special Requirements:

Approved Technical Electives (12 credits):

The technical electives program requires 3 credits of an appropriate 300, 400 or 500 course with a major emphasis on chemistry plus 9 credits of approved technical electives . A list of preapproved electives is available at <http://www.umche.maine.edu/chb/undergrad/techelec.htm>. Students may also select other courses with approval of the Curriculum Committee of the Department of Chemical and Biological Engineering.

## Ethics

The course sequence CHB 111, CHB 477, CHB 479 and CHB 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 General Education Human Values and Social Context electives or by taking the course CIE 410.

# Fundamentals of Engineering Examination

Students are encouraged to take the FE examination.

## Civil Engineering

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 129

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** None.

**Other GPA requirements to graduate:** 2.0 average in all CIE courses.

**Required Course(s) for fulfilling Capstone Experience:** CIE 411, 413

**Contact Information:** Bill Davids, Professor and Chair, 5711 Boardman Hall, Room 105, Tel: (207) 581-2170, email: [william.davids@maine.edu](mailto:william.davids@maine.edu)

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, management, or construction. Our programs educational objectives prepare graduates to:

1. Practice the disciplines of transportation, environmental, structural, water resources, and geotechnical engineering, and/or related fields.
2. Engage in advanced education, research, and development.
3. Pursue continuing education and professional licensure.
4. Promote and advance public health and safety, and enhance quality of life.
5. Act in a responsible, professional, and ethical manner.

More information about the department and the program can be found on our web site.

### Program Description

The multifaceted nature of this society-serving profession dictates that civil engineers have proficiency in five areas: structural, geotechnical, environmental, water resources, 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 two-course senior capstone course sequence, taken in the senior year, provides students the opportunity to apply their education to a realistic civil engineering project, while gaining understanding of professional practice issues.

Degrees are awarded upon satisfactory completion of 129 credits at an accumulative grade point average of not less than 2.0 in Civil Engineering courses. The program in Civil Engineering is accredited by the Engineering Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012 - telephone (410) 347-7700.

### **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, chemical, and ship building 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.

## **Required Courses in Suggested Sequence 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 131 - Chemistry for Civil, Electrical and Mechanical Engineers Credits: 3
- CHY 133 - Chemistry for Civil, Electrical and Mechanical Engineers Laboratory Credits: 1
- CIE 100 - Introduction to Civil and Environmental Engineering Credits: 1
- CIE 110 - Materials Credits: 3
- CIE 111 - Materials Laboratory Credits: 1
- ENG 101 - College Composition Credits: 3
- MAT 126 - Calculus I Credits: 4

### **First Year - Second Semester**

- CIE 101 - Civil Engineering Graphics Credits: 3
- CIE 115 - Computers in Civil Engineering Credits: 3
- MAT 127 - Calculus II Credits: 4
- PHY 121 - Physics for Engineers and Physical Scientists I Credits: 4
- Human Values and Social Context Elective Credits: 3 (footnote 1)

### **Second Year - First Semester**

- MAT 228 - Calculus III Credits: 4
- MEE 150 - Applied Mechanics: Statics Credits: 3
- PHY 122 - Physics for Engineers and Physical Scientists II Credits: 4
- SVT 102 - Surveying Principles for Civil Engineers Credits: 3

- Human Values and Social Context Elective Credits: 3 (footnote 1)

## Second Year - Second Semester

- CIE 225 - Transportation Engineering Credits: 3 (footnote 2)
- ECP 225 - Civil Engineering Technical Writing I Credits: 1
- MAT 258 - Introduction to Differential Equations with Linear Algebra Credits: 4
- MEE 251 - Strength of Materials Credits: 3
- Approved Science Elective Credits: 4 (footnote 7)

## Third Year - First Semester

- CIE 331 - Fundamentals of Environmental Engineering Credits: 3
- CIE 340 - Introduction to Structural Analysis Credits: 4
- CIE 350 - Hydraulics Credits: 3
- CIE 351 - Hydraulics Laboratory Credits: 1
- CMJ 103 - Fundamentals of Public Communication Credits: 3
- Human Values and Social Context Elective Credits: 3 (footnote 1)

## Third Year - Second Semester

- CIE 365 - Soil Mechanics Credits: 3
- CIE 366 - Soil Mechanics Laboratory Credits: 1
- STS 332 - Statistics for Engineers Credits: 3
- Civil Engineering Elective Credits: 3 (footnotes 3 and 4)
- Engineering Science Elective Credit: 3 (footnote 5)

## Fourth Year - First Semester

- CIE 412 - Engineering Decisions Credits: 2 (footnote 6)
- CIE 413 - Project Management Credits: 2 (footnote 6)
- Civil Engineering Elective Credits: 3 (footnotes 3 and 4)
- Civil Engineering Elective Credits: 3 (footnotes 3 and 4)
- Human Values and Social Context Elective Credits: 3 (footnote 1)
- Civil Engineering or Technical Elective Credits: 3 (footnote 3 and 4)
- ECP 413 - Civil Engineering Technical Writing II Credits: 1

## Fourth Year - Second Semester

- CIE 410 - Engineering Ethics Credits: 1
- ECP 411 - Civil Engineering Technical Writing III Credits: 1
- CIE 411 - Engineering Project Design Credits: 3
- Civil Engineering Elective Credits: 3 (footnotes 3 and 4)
- Civil Engineering or Technical Elective Credits: 3 (footnotes 3 and 4)
- Human Values and Social Context Elective Credits: 3 (footnote 1)

## Explanation of Requirements - footnotes:

1. Students are assisted by faculty advisors in developing an elective program to meet their individual needs within the University's general education requirements. While most of the general education requirements are automatically met with a civil engineering degree, a student is required to select an additional 15 credit hours of electives to help meet the 18 credit hour "Human Values and Social Context" requirement (the required CMJ 103 satisfies the other three credit hours),
2. General education requirements mandate two writing intensive courses. CIE 225 and CIE 413 are designated as writing intensive courses within the CIE major, while ECP 411 meets the outside the major writing intensive course. NOTE: CIE 225 must be taken concurrently with ECP 225 and CIE 413 must be taken concurrently with ECP 413 for CIE 225 and CIE 413 to count as writing intensive courses.
3. Civil Engineering and technical electives must be a minimum of 21 credit hours with no more than two technical elective courses. Civil engineering electives are advanced (400 or 500 level) civil engineering courses. The technical elective is an advanced Civil Engineering course or CIE 394 Civil Engineering Practice or other advanced level engineering, science, or mathematics course relevant to Civil Engineering. In addition, either ERS 101 Intro. to Geology or BIO 100 Basic Biology can be taken as the technical elective.
4. An additional requirement of the CIE Electives is that students take a CIE elective course in three of the five civil engineering subdisciplines: Transportation (CIE 42X), Environmental (CIE 43X), Structural (CIE44X), Water Resources (CIE 45X), and Geotechnical (CIE 46X).
5. Three credits of approved engineering science electives, usually in mechanical or electrical engineering, are required. Civil Engineering courses cannot be used for these three specific credit hours. Typical courses taken are:  
MEE 230 Thermodynamics I  
MEE 270 Dynamics  
ECE 209 Fundamentals of Electric Circuits
6. CIE 413 must be taken in the Fall semester immediately preceding CIE 411.
7. Courses that will satisfy the Approved Science Elective are: BIO 100 Basic Biology, ERS 101 Introduction to Geology, ERS 102 Environmental Geology of Maine, and PSE 140/141 Soil Science.

### SPECIAL NOTE:

Sixteen credit hours of engineering design courses are required. Eleven hours are earned in the required courses. At least five additional design credits must be included in the electives selected by the student. The College of Engineering only allows seniors whose "advancement in the field will permit their taking a graduate level course among graduate students without disadvantage to themselves" to take 500-level courses. The design content of CIE electives are as follows:

#### Engineering Science and Design Content of Departmental Electives

| Course  | Engineering Design | Engineering Science | Subject Area   |
|---------|--------------------|---------------------|----------------|
| CIE 394 | 1-3                | 0                   | ----           |
| CIE 424 | 2                  | 1                   | Transportation |
| CIE 425 | 1                  | 2                   | Transportation |
| CIE 426 | 3                  | 0                   | Transportation |

|         |   |   |                 |
|---------|---|---|-----------------|
| CIE 427 | 1 | 0 | Transportation  |
| CIE 430 | 3 | 1 | Environmental   |
| CIE 431 | 3 | 1 | Environmental   |
| CIE 432 | 4 | 0 | Environmental   |
| CIE 434 | 4 | 0 | Environmental   |
| CIE 439 | 0 | 3 | Environmental   |
| CIE 440 | 0 | 4 | Structures      |
| CIE 442 | 4 | 0 | Structures      |
| CIE 443 | 4 | 0 | Structures      |
| CIE 450 | 1 | 2 | Water Resources |
| CIE 455 | 1 | 2 | Water Resources |
| CIE 456 | 1 | 2 | Water Resources |
| CIE 460 | 3 | 0 | Geotechnical    |
| CIE 533 | 0 | 3 | Environmental   |
| CIE 534 | 0 | 3 | Environmental   |
| CIE 537 | 0 | 3 | Environmental   |
| CIE 540 | 0 | 3 | Structures      |
| CIE 543 | 2 | 1 | Structures      |
| CIE 544 | 4 | 0 | Structures      |
| CIE 545 | 0 | 3 | Structures      |
| CIE 547 | 3 | 0 | Structures      |
| CIE 548 | 3 | 0 | Structures      |
| CIE 549 | 0 | 3 | Structures      |
| CIE 556 | 1 | 2 | Water Resources |
| CIE 562 | 3 | 0 | Geotechnical    |
| CIE 563 | 1 | 1 | Geotechnical    |
| CIE 564 | 3 | 0 | Geotechnical    |
| CIE 565 | 3 | 0 | Geotechnical    |
| CIE 566 | 3 | 0 | Geotechnical    |
| CIE 567 | 3 | 0 | Geotechnical    |

# Computer Engineering

## OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 124

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** Repeating any ECE course for which a grade of F, L, or WF has been recorded requires a grade of C- or better in prerequisites for the course. Dismissal from the program will be recommended if any required course in the program is taken twice without achieving a passing grade. This includes courses where a grade of AU, L, or WF is received.

**Other GPA requirements to graduate:** Minimum of a cumulative 2.0 GPA for all courses taken. Minimum of a cumulative 2.0 GPA for all ECE courses taken. Minimum of a cumulative 2.0 GPA for all Computer courses taken.

**Required Course(s) for fulfilling Capstone Experience:** ECE 403

**Contact Information:** Donald Hummels, Professor and Chair, Electrical and Computer Engineering, 101 Barrows Hall, (207) 581-2223.

The Department of Electrical and Computer Engineering offers undergraduate and graduate degrees in both Electrical Engineering and Computer Engineering. Additional and more detailed information about the Department, its programs, career opportunities, scholarships, and a wealth of other materials are available at [www.ece.umaine.edu](http://www.ece.umaine.edu).

The mission of the Computer Engineering program is to ensure that students obtain a solid educational background in computer engineering so that they are nationally competitive and successful in their chosen profession and are prepared for future graduate training. To achieve this, within two to five years of graduation, graduates of the computer engineering program will:

1. Demonstrate a solid foundation in computer engineering by holding positions that utilize their engineering training, advancing in their job responsibilities, or be pursuing postgraduate education.
2. Demonstrate the ability to function in the workplace through independent thought, problem solving, teamwork, and effective communication.
3. Be working as engineering professionals, acting ethically, adhering to standards, and be committed to the welfare of employees and the general population.
4. Participate in lifelong learning activities to continue their professional development.

### Program Description

The Computer Engineering curriculum provides students with the technical skills as well as the 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 lifelong learning.

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

To obtain a BS degree in Computer Engineering, a student must: (1) meet all University academic requirements, (2) meet all Computer Engineering curriculum requirements, (3) have a GPA of 2.0 or better in all ECE courses, and (4) have a GPA of 2.0 or



better in all computer courses. Repeating any ECE course for which a grade of F, L, or WF has been recorded requires a grade of C- or better in prerequisites for the course. Dismissal from the program will be recommended if any required course in the program is taken twice without receiving a passing grade. This includes courses where a grade of AU, L, or WF is received.

Students may petition the ECE faculty for exceptions to any program requirements. The program in Computer Engineering is accredited by the Engineering Accreditation Commission of ABET, [www.abet.org](http://www.abet.org).

## Computer Engineering Degree Requirements

### University General Education Requirements

Mathematics, Science, and Writing Competency: covered by required Computer Engineering courses

Capstone Experience: Fulfilled by completing ECE 405 , ECE 406 , and ECE 403

Human Values and Social Context (HV&SC) (18 cr. covering the areas below):

1. Western cultural tradition
2. Social context and institutions
3. Cultural diversity and international perspectives
4. Population and the environment
5. Artistic and creative expression

Ethics: A separate course, or a course in HV&SC category within the General Education requirements.

### Required Courses

- CMJ 103 - Fundamentals of Public Communication Credits: 3  
(Note: counts towards HV&SC requirement as well)
- COS 221 - Data Structures in C++ Credits: 3
- ENG 101 - College Composition Credits: 3
- PHY 121 - Physics for Engineers and Physical Scientists I Credits: 4
- PHY 122 - Physics for Engineers and Physical Scientists II Credits: 4
- MAT 126 - Calculus I Credits: 4
- MAT 127 - Calculus II Credits: 4
- MAT 228 - Calculus III Credits: 4
- MAT 258 - Introduction to Differential Equations with Linear Algebra Credits: 4
  
- MAT 481 - Discrete Mathematics Credits: 3  
or
- COS 250 - Discrete Structures Credits: 3
  
- ECE 100 - Electrical and Computer Engineering Seminar Credits: 1
- ECE 101 - Introduction to Electrical and Computer Engineering Credits: 3
- ECE 177 - Introduction to Programming for Engineers Credits: 4
- ECE 210 - Electric Circuits Credits: 4
- ECE 214 - Electrical Circuits Laboratory Credits: 2

- ECE 271 - Microcomputer Architecture and Applications Credits: 3
- ECE 275 - Sequential Logic Systems Credits: 3
- ECE 314 - Signals and Systems Credits: 3
  
- ECE 316 - Random Signal Analysis Credits: 3  
or
- STS 332 - Statistics for Engineers Credits: 3  
or
- CHB 350 - Statistical Process Control and Analysis Credits: 3
  
- ECE 331 - Introduction to Unix Systems Administration Credits: 3  
or
- COS 331 - Operating Systems Credits: 3
  
- ECE 342 - Electronics I Credits: 4
- ECE 403 - Electrical and Computer Engineering Design Project Credits: 2
- ECE 405 - Computer Engineering Design Project Credits: 1
- ECE 406 - Computer Engineering Design Project Credits: 4
  
- ECE 471 - Embedded Systems Credits: 3  
or
- ECE 477 - Hardware Applications Using C Credits: 3
  
- ECE 473 - Computer Architecture and Organization Credits: 4
- ECE 486 - Digital Signal Processing Credits: 4
- ECP 214 - Technical Writing Workshop for Electrical Networks I Credits: 1
- ECP 342 - Technical Writing Workshop for Electrical Networks II Credits: 1
- ECP 403 - Technical Writing Workshop for Electrical and Computer Engineering Design Project Credits: 1

## ECE Technical Electives

(16 total credits, at least 10 of which must be Computer Engineering Focus)

### Computer Engineering Focus Course

- ECE 417 - Introduction to Robotics Credits: 3
  
- ECE 471 - Embedded Systems Credits: 3  
or
- ECE 477 - Hardware Applications Using C Credits: 3
  
- ECE 478 - Industrial Computer Control Credits: 3
- COS 300 and 400 level courses with advisor approval
- ECE 498 - Selected Topics in Electrical and Computer Engineering Credits: 1-3 (with advisor approval)

## Non-Computer Engineering Focus Courses

ECE 300 and 400 Level courses with advisor approval.

## Generic Technical Electives

6 credits with advisor approval, typically 300 level or higher.

## Mathematics & Science Courses

Students must earn a minimum of 31 credits in Mathematics and Science Courses.

# Construction Engineering Technology

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 126

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** The three course math sequence (MAT 122, TME 152, TME 253) requires a "C" or better in each class to move to the next class.

**Other GPA requirements to graduate:** CET majors must accumulate a GPA of 2.0 in all required CET classes including SVT 121.

**Required Course(s) for fulfilling Capstone Experience:** CET 458

**Contact Information:** Will Manion, 112 Machine Tool Lab, (207) 581-2184, wmanion@maine.edu

The Construction Engineering 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 Engineering 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. The specific program educational objectives are to prepare graduates to:

- Demonstrate a practical understanding of skills in mathematics, basic physical sciences, business, surveying, and engineering sufficient to pass the associate constructor exam.
- Show proficiency in using equipment and gathering experimental data for the use of analytical and problem-solving skills reasonably expected for construction practice necessary to be in responsible charge of construction or engineering operations.
- Be able to apply design skills sufficient to meet employer and client expectations in the areas of construction operations.
- Conduct themselves ethically and professionally and exhibit personal integrity and responsibility in construction practices.

- Be proficient in written, oral, and graphic communication to deal with promotion of services, business communications, reporting to employers, interacting with peers, and addressing client matters in public forums.
- Have an awareness for the arts, humanities, social sciences, and diversity and their place among society and the profession in taking leadership roles in the community and profession.
- Be able to work in a multi-disciplinary team environment, and lead when necessary to accomplish a given mission or project when providing services to employers and the public.
- Recognize, participate and appreciate the need for quality improvement of services, continuous improvement of professional skills, and embarking on lifelong learning.

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.

Degrees are awarded upon satisfactory completion of 126 credits at an accumulative grade point average of not less than 2.0 overall. Students must also achieve at least a 2.0 grade point average in all required CET courses. Students must take the Associate Constructor Level I exam and pass at least four of the content areas. The CMT program is accredited by Engineering Technology Accreditation Commission of ABET.

### **Student Outcomes**

Prior to graduation, students are required to demonstrate the following learned capabilities:

- a. an ability to select and apply the knowledge, techniques, skills, and modern tools of the discipline to broadly-defined engineering technology activities
- b. an ability to select and apply a knowledge of mathematics, science, engineering, and technology to engineering technology problems that require the application of principles and applied procedures or methodologies
- c. an ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes
- d. an ability to design systems, components, or processes for broadly-defined engineering technology problems appropriate to program educational objectives
- e. an ability to function effectively as a member or leader on a technical team
- f. an ability to identify, analyze, and solve broadly-defined engineering technology problems
- g. an ability to apply written, oral, and graphical communication in both technical and non-technical environments; and an ability to identify and use appropriate technical literature
- h. an understanding of the need for and an ability to engage in self-directed continuing professional development
- i. an understanding of and a commitment to address professional and ethical responsibilities including a respect for diversity
- j. a knowledge of the impact of engineering technology solutions in a societal and global context
- k. a commitment to quality, timeliness, and continuous improvement.

### **Computers**

Incoming students are required to have a laptop computer. Visit our website for recommended configuration details.

### **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.

The recommended sequence of the four-year curriculum is outlined below. Copies can be obtained in the School of Engineering Technology office.

## Required Courses in Suggested Sequence for the B.S. in Construction Engineering Technology

### First Year - First Semester

- CET 100 - Introduction to Construction Management Credits: 1
- CMJ 103 - Fundamentals of Public Communication Credits: 3  
See Footnote 2
- COS 103 - Introduction to Spreadsheets Credits: 1
- MAT 122 - Pre-Calculus Credits: 4
- PHY 107 - Technical Physics I Credits: 4
- SVT 121 - AutoCAD for Surveyors I Credits: 3

### First Year - Second Semester

- CET 101 - Plane Surveying Credits: 3
- CET 130 - Building Construction Credits: 3
- PHY 108 - Technical Physics II Credits: 4
- TME 152 - Introductory Calculus for Engineering Technology Credits: 3
- ENG 101 - College Composition Credits: 3

### Second Year - First Semester

- CET 202 - Construction Surveying Credits: 3
- CET 228 - Plan Reading & Analysis Credits: 1
- CIE 110 - Materials Credits: 3
- CIE 111 - Materials Laboratory Credits: 1
- ECO 120 - Principles of Microeconomics Credits: 3  
See Footnote 2
- TME 253 - Applied Calculus for Engineering Technology Credits: 4

### Second Year - Second Semester

- CET 221 - Construction Methods Credits: 3
- CET 224 - Construction Safety Credits: 1
- CET 228 - Plan Reading & Analysis Credits: 1
- ENG 212 - Persuasive and Analytical Writing Credits: 3  
See Footnote 1
- STS 215 - Introduction to Statistics for Business and Economics Credits: 3  
Or

- STS 232 - Principles of Statistical Inference Credits: 3
- Artistic and Creative Expression Elective<sup>3</sup> Credits: 3
- Technical Elective Credits: 3

### Third Year - First Semester

- BUA 201 - Principles of Financial Accounting Credits: 3
- CET 326 - Soil Mechanics and Foundations Credits: 3
- CET 327 - Soil Mechanics and Foundations Laboratory Credits: 1
- CET 356 - Construction Documents and Administration Credits: 3
- CET 451 - Construction Law Credits: 3  
See Footnote 2
- ENG 317 - Business and Technical Writing Credits: 3

### Third Year - Second Semester

- CET 332 - Civil Engineering Technology Credits: 3
- CET 360 - Construction Estimating and Bidding Credits: 3
- CET 413 - Statics and Strength of Materials Credits: 4
- CMJ 257 - Business and Professional Communication Credits: 3  
See Footnote 4
- ECO 121 - Principles of Macroeconomics Credits: 3  
See Footnote 2

### Fourth Year - First Semester

- CET 412 - Sustainable Population and Environmental Design and Construction Credits: 3
- CET 414 - Structural Design Credits: 4
- CET 462 - Construction Planning and Scheduling Credits: 3
- Technical Elective Credits: 3
- Western Cultural Tradition Elective<sup>3</sup> Credits: 3

### Fourth Year - Second Semester

- CET 458 - Management of Construction Credits: 3
- MET 484 - Engineering Economics Credits: 3
- Technical Elective Credits: 3
- Technical Elective Credits: 3
- Cultural Diversity Elective<sup>3</sup> Credits: 3
- Ethics Requirement
- AC Exam

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.

<sup>1</sup>ENG 417, ENG 418 and ENG 496 can be substituted for ENG 212 - only with advisor approval

<sup>2</sup>Fulfills the Human Values/Social Context Elective and 18 credit hour requirement.

<sup>3</sup>Students are assisted by faculty advisors in developing an elective program to meet their individual needs within the University's general education requirements. While most of the general education requirements are automatically met with a construction management technology degree, a student is required to select an additional 12 credit hours of electives to help meet the 18 credit hour "Human Values and Social Context" requirement (the required CMJ 103 and ENG 317 courses satisfy the other six credit hours. One of the General Education electives must also satisfy the ethics requirement of the General Education Requirements.

<sup>4</sup>Other communication classes such as CMJ 345, CMJ 347 or CMJ 367 may be substituted for CMJ 257 with advisor permission.

<sup>5</sup>AC Exam - Students must take the Associated Constructor Level I exam and pass at least four of the content areas before graduating.

## Electrical Engineering

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 124

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** Repeating any ECE course for which a grade of F, L, or WF has been recorded requires a grade of C- or better in prerequisites for the course. Dismissal from the program will be recommended if any required course in the program is taken twice without achieving a passing grade. This includes courses where a grade of AU, L, or WF is received.

**Other GPA requirements to graduate:** Minimum of a cumulative 2.0 GPA for all courses taken. Minimum of a cumulative 2.0 GPA for all ECE courses taken.

**Required Course(s) for fulfilling Capstone Experience:** ECE 403

**Contact Information:** Donald Hummels, Professor and Chair, Electrical and Computer Engineering, 101 Barrows Hall, (207) 581-2223.

The Department of Electrical and Computer Engineering offers undergraduate and graduate degrees in both Electrical Engineering and Computer Engineering. Additional and more detailed information about the Department, its programs, career opportunities, scholarships, and a wealth of other materials are available on the Web at [www.ece.umaine.edu](http://www.ece.umaine.edu).

The mission of the Electrical Engineering program is to ensure that students obtain a solid educational background in electrical engineering so that they are nationally competitive and successful in their chosen profession and are prepared for future graduate training. To achieve this, within two to five years of graduation, graduates of the computer engineering program will:

1. Demonstrate a solid foundation in electrical engineering by holding positions that utilize their engineering training, advancing in their job responsibilities, or be pursuing postgraduate education.
2. Demonstrate the ability to function in the workplace through independent thought, problem solving, teamwork and effective communication.
3. Be working as engineering professionals, acting ethically, adhering to standards and be committed to the welfare of employees and the general population.

4. Participate in lifelong learning activities to continue their professional development.

### **Program Description**

The Electrical Engineering curriculum provides students with the technical skills as well as the 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 graduates who can carry a technical project from inception through to implementation of a successful solution. The process begins in the first year of the program when students learn to prototype digital circuits and program a microcontroller. It continues through the senior year when they complete their capstone design projects. In this latter case, students usually work in two-person teams over three semesters where they propose, specify, create, present, and demonstrate a solution to a technical problem of their choosing.

To obtain a BS degree 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. Repeating any ECE course for which a grade of F, L, or WF has been recorded requires a grade of C- or better in prerequisites for the course. Dismissal from the program will be recommended if any required course in the program is taken twice without receiving a passing grade. This includes courses where a grade of AU, L, or WF is received. Students may petition the ECE faculty for exceptions to any program requirements. The program in Electrical Engineering is accredited by the Engineering Accreditation Commission of ABET.

## Electrical Engineering Degree Requirements

### University General Education Requirements

Mathematics, Science, and Writing Competency: covered by required Electrical Engineering courses

Capstone Experience: Fulfilled by completing ECE 401, ECE 402, and ECE 403

Human Values and Social Context (HV&SC) (18 cr. covering the areas below):

1. Western cultural tradition
2. Social context and institutions
3. Cultural diversity and international perspectives
4. Population and the environment
5. Artistic and creative expression

Ethics: A separate course, or a course in HV&SC category within the General Education requirements.

### Required Courses

- CMJ 103 - Fundamentals of Public Communication Credits: 3  
(Counts towards HV&SC requirement as well)
- CHY 131 - Chemistry for Civil, Electrical and Mechanical Engineers Credits: 3
- CHY 133 - Chemistry for Civil, Electrical and Mechanical Engineers Laboratory Credits: 1
- ENG 101 - College Composition Credits: 3
- MAT 126 - Calculus I Credits: 4
- MAT 127 - Calculus II Credits: 4



- MAT 228 - Calculus III Credits: 4
- MAT 258 - Introduction to Differential Equations with Linear Algebra Credits: 4
- PHY 121 - Physics for Engineers and Physical Scientists I Credits: 4
- PHY 122 - Physics for Engineers and Physical Scientists II Credits: 4
- ECE 100 - Electrical and Computer Engineering Seminar Credits: 1
- ECE 101 - Introduction to Electrical and Computer Engineering Credits: 3
- ECE 177 - Introduction to Programming for Engineers Credits: 4
- ECE 210 - Electric Circuits Credits: 4
- ECE 214 - Electrical Circuits Laboratory Credits: 2
- ECE 271 - Microcomputer Architecture and Applications Credits: 3
- ECE 275 - Sequential Logic Systems Credits: 3
- ECE 314 - Signals and Systems Credits: 3
  
- ECE 316 - Random Signal Analysis Credits: 3
- Or
- STS 332 - Statistics for Engineers Credits: 3
- Or
- CHB 350 - Statistical Process Control and Analysis Credits: 3
  
- ECE 342 - Electronics I Credits: 4
- ECE 343 - Electronics II Credits: 4
- ECE 351 - Fields and Waves Credits: 3
- ECE 401 - Electrical Engineering Design Project Credits: 1
- ECE 402 - Electrical Engineering Design Project Credits: 4
- ECE 403 - Electrical and Computer Engineering Design Project Credits: 2
- ECE 414 - Feedback Control Systems Credits: 3
- ECE 486 - Digital Signal Processing Credits: 4
- ECP 214 - Technical Writing Workshop for Electrical Networks I Credits: 1
- ECP 342 - Technical Writing Workshop for Electrical Networks II Credits: 1
- ECP 403 - Technical Writing Workshop for Electrical and Computer Engineering Design Project Credits: 1

## Technical Electives

15 total credits, 9 of which must be Electrical Engineering focus

### Electrical Engineering Focus Courses

- ECE 427 - Electric Power Systems Credits: 3
- ECE 450 - Power Electronics Credits: 3
- ECE 451 - Power Electronics Lab Credits: 1
- ECE 444 - Analog Integrated Circuits Credits: 3
- ECE 445 - Analysis and Design of Digital Integrated Circuits Credits: 3
- ECE 453 - Microwave Engineering Credits: 4
- ECE 455 - Electric Drives Credits: 3
- ECE 456 - Electric Drives Lab Credits: 1

- ECE 462 - Introduction to Basic Semiconductor Devices and Associated Circuit Models Credits: 3
- ECE 464 - Microelectronics Science and Engineering Credits: 3
- ECE 465 - Introduction to Sensors Credits: 3
- ECE 484 - Communications Engineering Credits: 3
- ECE 498 - Selected Topics in Electrical and Computer Engineering Credits: 1-3

## Non-Electrical Engineering Focus Courses

- ECE 300 and 400 Level courses with advisor approval.

## Generic Technical Electives

- 6 credits with advisor approval, typically 300 level or higher

## Concentration in Power Engineering

The Power Concentration for Electrical Engineering majors reflects an increased background in the generation and delivery of electric energy. Students complete a collection of core and elective courses with emphasis in the design, control, and application of power and energy systems. This concentration prepares students for working in the power utility industry, construction industry, submarine and aircraft manufacturing, and/or attending graduate school for research and development in smart grid, renewable energy, and other electric energy related technologies.

To complete a Concentration in Power Engineering, students receiving the B.S. degree in Electrical Engineering must complete the required power concentration core courses, and at least six credits of approved power elective courses. Of the courses used to complete the concentration, at least seven credits must be beyond the base requirements for the Electrical Engineering degree.

## Power Concentration Required Core Courses

- EET 321 - Electro-Mechanical Energy Conversion Credits: 4
- ECE 427 - Electric Power Systems Credits: 3

## Power Concentration Approved Elective Courses

6 credits required from the Approved Elective Course list.

- EET 276 - Programmable Logic Controllers Credits: 4
- ECE 450 - Power Electronics Credits: 3
- ECE 455 - Electric Drives Credits: 3
- EET 460 - Renewable Energy and Electricity Production Credits: 3
- EET 498 - Selected Topics in Electrical Engineering Technology Credits: 1-4 \*
- ECE 498 - Selected Topics in Electrical and Computer Engineering Credits: 1-3 \*

\* "Selected Topics" courses must be related to the power engineering area, and are accepted at the discretion of the ECE chair.

## Electrical Engineering Technology

## OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 126 EET option; 125 IT option

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** The four course math sequence (MAT122, MAT126, MAT127, MAT258) requires a "C" or better in each class to move to the next class.

**Other GPA requirements to graduate:** EET majors must accumulate a GPA of 2.0 in all required EET classes.

**Required Course(s) for fulfilling Capstone Experience:** EET 350 and EET 451 and EET 452

**Contact Information:** Paul Villeneuve, 7 Barrows Hall (207) 581-2271, paul.villeneuve@maine.edu

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 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: electrical power and renewable energy, electronic design, integrated motion control, and microcomputer applications. All courses in the program are taught in a way that includes a strong component of practical applications, along with core theoretical concepts.

The EET degree also 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 spread over three semesters finishing in 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.

Degrees are awarded upon satisfactory completion of 126 credits in the EET Option and 128 credits in the IT Option with an accumulative grade point average of not less than 2.0 overall. Students must also achieve at least a 2.0 grade point average in all required EET courses. The EET program is accredited by the Engineering Technology Accreditation Commission of ABET.

### **Student Outcomes**

Prior to graduation, students are required to demonstrate the following learned capabilities:

- a. an ability to select and apply the knowledge, techniques, skills, and modern tools of the discipline to broadly-defined engineering technology activities
- b. an ability to select and apply a knowledge of mathematics, science, engineering, and technology to engineering technology problems that require the application of principles and applied procedures or methodologies
- c. an ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes
- d. an ability to design systems, components, or processes for broadly-defined engineering technology problems appropriate to program educational objectives
- e. an ability to function effectively as a member or leader on a technical team
- f. an ability to identify, analyze, and solve broadly-defined engineering technology problems
- g. an ability to apply written, oral, and graphical communication in both technical and non-technical environments; and an ability to identify and use appropriate technical literature
- h. an understanding of the need for and an ability to engage in self-directed continuing professional development
- i. an understanding of and a commitment to address professional and ethical responsibilities including a respect for diversity
- j. a knowledge of the impact of engineering technology solutions in a societal and global context
- k. a commitment to quality, timeliness, and continuous improvement.

### **Concentration and Minor Options**

Students who wish to pursue the degree but gain extra experience in computer and data networking applications may pursue a concentration in information 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. EET students can also enrich their academic experience by completing minors that complement their program such as engineering entrepreneurial, 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.

### **Computers**

Incoming students are required to have a laptop computer. Visit our website for recommended configuration details.

### **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. The electrical power field is another area where EET graduates are employed. Many in-state and out-of-state companies rely on our graduates to fill positions in design plants, substations, and transmission lines.

### **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.

The recommended sequence of the four-year curriculum is outlined below. Copies can be obtained in the School of Engineering Technology office.

## Required Courses in Suggested Sequence for the B.S. in Electrical Engineering Technology

### First Year - First Semester

- EET 100 - Introduction to Electrical Engineering Technology Credits: 3
- ENG 101 - College Composition Credits: 3
- PHY 107 - Technical Physics I Credits: 4
- MAT 122 - Pre-Calculus Credits: 4

### First Year - Second Semester

- EET 111 - Circuit Analysis I Credits: 4
- EET 275 - Digital Communications Credits: 4
- MAT 126 - Calculus I Credits: 4
- PHY 108 - Technical Physics II Credits: 4

### Second Year - First Semester

- EET 112 - Circuit Analysis II Credits: 4
- EET 276 - Programmable Logic Controllers Credits: 4
- MAT 127 - Calculus II Credits: 4
- Western Cultural Tradition Elective<sup>1</sup> Credits: 3

### Second Year - Second Semester

- CMJ 103 - Fundamentals of Public Communication Credits: 3
- MAT 258 - Introduction to Differential Equations with Linear Algebra Credits: 4
- EET 174 - Introduction to Microcomputers Credits: 4
- EET XXX AutoCAD Credits: 2
- EET 241 - Analog Circuit Fundamentals Credits: 4

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

## Electrical Engineering Technology Option:

### Third Year - First Semester

- EET 242 - Advanced Analog Circuit Design Credits: 4
- EET 324 - Network Analysis and Applications Credits: 4
- EET 386 - Project Management Credits: 3
- ENG 317 - Business and Technical Writing Credits: 3
- Cultural Diversity and International Perspectives Elective<sup>1</sup>: 3

### Third Year - Second Semester

- CHB 350 - Statistical Process Control and Analysis Credits: 3  
See Footnote 2
- EET 321 - Electro-Mechanical Energy Conversion Credits: 4
- EET 325 - Design and Applications of Control Systems Credits: 4
- EET 350 - Senior Design Project I Credits: 1
- Technical Elective Credits: 3

### Fourth Year - First Semester

- EET 323 - Power Systems Analysis Credits: 4
- EET 451 - Senior Design Project II Credits: 1
- MET 433 - Thermodynamics Credits: 3
- Population & Environment Elective<sup>1</sup> Credits: 3
- EET Technical Elective Credits: 3
- Ethics Elective<sup>1</sup> Credits: 3

### Fourth Year - Second Semester

- CHY 121 - Introduction to Chemistry Credits: 3
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- EET 452 - Senior Design Project III Credits: 2
- MET 484 - Engineering Economics Credits: 3
- Artistic and Creative Expression Elective<sup>1</sup> - Credits: 3
- Technical Elective Credits: 3

## Information Engineering Technology Option:

## Third Year - First Semester

- COS 220 - Introduction to C++ Programming Credits: 3
- EET 386 - Project Management Credits: 3
- ENG 317 - Business and Technical Writing Credits: 3
- Technical Elective Credits: 3
- Cultural Diversity Elective<sup>1</sup> Credits: 3

## Third Year - Second Semester

- CHB 350 - Statistical Process Control and Analysis Credits: 3  
See Footnote 2
- EET 350 - Senior Design Project I Credits: 1
- Artistic and Creative Expression Elective<sup>1</sup> Credits: 3
- IT Elective 1\*\* Credits: 3
- IT Elective 2\*\* Credits: 3
- Technical Elective Credits: 3

## Fourth Year - First Semester

- EET 451 - Senior Design Project II Credits: 1
- MET 433 - Thermodynamics Credits: 3
- Population and Environmental Elective<sup>1</sup> Credits: 3
- IT Elective 3\*\* Credits: 3
- IT Elective 4\*\* Credits: 3
- IT Elective 5\*\* Credits: 3

## Fourth Year - Second Semester

- EET 452 - Senior Design Project III Credits: 2
- MET 484 - Engineering Economics Credits: 3
- IT Elective 6\*\* Credits: 3
- Human Values/Social Context Elective<sup>1</sup> Credits: 3
- Technical Elective Credits: 3
- Ethics Requirement

Students must see their advisor for approval of all electives.

- <sup>1</sup> Students are assisted by faculty advisors in developing an elective program to meet their individual needs within the University's general education requirements. While most of the general education requirements are automatically met with an electrical engineering technology degree, a student is required to select an additional 12 credit hours of electives to help meet the 18 credit hour "Human Values and Social Context" requirement (the required CMJ 103 and

ENG 317 courses satisfy the other three credit hours. One of the General Education electives must also satisfy the ethics requirement of the General Education Requirements.

- <sup>2</sup>MAT 232 or MAT 332 may be substituted for CHB 350
- 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 120 - Introduction to Programming I Credits: 3
- COS 215 - Introduction to Computing Using FORTRAN Credits: 3
- COS 221 - Data Structures in C++ Credits: 3
- COS 225 - Object-Oriented Design, Programming and Data Structures Credits: 4
- COS 226 - Introduction to Data Structures Credits: 3
- COS 250 - Discrete Structures Credits: 3
- COS 235 - Computer Architecture Credits: 4
- COS 415 - Computer Simulation and Modeling, from Development to Display Credits: 3
- COS 420 - Introduction to Software Engineering Credits: 3
- COS 331 - Operating Systems Credits: 3
- COS 440 - Computer Networks I Credits: 3
- ECE 331 - Introduction to Unix Systems Administration Credits: 3
- ECE 417 - Introduction to Robotics Credits: 3
- ECE 471 - Embedded Systems Credits: 3
- ECE 473 - Computer Architecture and Organization Credits: 4
- ECE 477 - Hardware Applications Using C Credits: 3
- ECE 478 - Industrial Computer Control Credits: 3
- NMD 202 - Information Design Credits: 3
- NMD 302 - Interaction Design in New Media Credits: 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.

Graduates of the University of Maine Engineering Physics Program are able to:

- Use the versatility afforded by the engineering physics degree to collaborate with a dynamic, diverse, and technically sophisticated workforce by successfully employing engineering/scientific skills, developed at UMaine, in a wide range of fields.
- Continuously improve and expand their technical and professional skills through informal self-study, coursework, pursuit of licensure, or the attainment of advanced degrees in science, engineering, business, or other professional fields
- Advance the profession and themselves through ethical behavior, communication, teamwork and leadership.



- Recognize the importance of civic engagement and support the significant roles that engineering and science play in the betterment of 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.

### **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 122 credits, 45 are electives, permitting each major, in consultation with both her/his physics advisor and engineering 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 24 credits of engineering courses, most of which lie in the student's area of engineering specialization, along with a technical elective for a total of 24-30 credits. (A technical elective can be an Astronomy, Physics, Engineering, 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 Bioengineering, Civil and Environmental, Electrical and Computer, Mechanical) 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 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 and our required PHY 476. Approximately 50% of graduating Engineering Physics majors earn a minor in mathematics.

The Engineering Physics program requires satisfactory completion of at least 122 credits at an accumulative grade point average of not less than 2.0. The program in Engineering Physics is accredited by the Engineering Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012 - telephone: (207) 347-7700.

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 School online Catalog.

### **Cooperative "Work Experience" Program Option**

Engineering Physics majors who have completed both their sophomore year and 16 credits in physics courses 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. Roughly half go directly to an engineering/physics employment opportunity immediately after graduation. Others continue their education in graduate programs in engineering, physics, law (e.g. 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.

## Required Courses in Suggested Sequence for the B.S. in Engineering Physics

The recommended sequence of the four-year curriculum is shown below. Copies of the curriculum, with detailed explanations of the recommendations, can be obtained in the Office of the Department of Physics and Astronomy. There are possible alterations to this schedule and substitutions may be made for some courses on approval of the Chair 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 her/his advisor.

### First Year - First Semester

- CHY 121 - Introduction to Chemistry Credits: 3
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- MAT 126 - Calculus I Credits: 4
- PHY 100 - Introduction to Physics and Astronomy Credits: 1
- PHY 121 - Physics for Engineers and Physical Scientists I Credits: 4
- Human Values/Social Context and Ethics Elective I<sup>3</sup> Credits: 3

### First Year - Second Semester

- COS 220 - Introduction to C++ Programming Credits: 3  
See Footnote 1
- ENG 101 - College Composition Credits: 3
- MAT 127 - Calculus II Credits: 4
- PHY 122 - Physics for Engineers and Physical Scientists II Credits: 4
- Engineering Sequence I<sup>2</sup> Credits: 3

### Second Year - First Semester

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

### Second Year - Second Semester

- MAT 259 - Differential Equations Credits: 3
- PHY 200 - Career Preparation in Physics and Engineering Physics I Credits: 1
- PHY 223 - Special Relativity Credits: 1
- PHY 230 - Physical Measurements Laboratory II Credits: 2
- PHY 238 - Mechanics Credits: 3
- Engineering Sequence III<sup>2</sup> Credits: 3
- Human Values/Social Context and Ethics Elective III<sup>3</sup> Credits: 3

### Third Year - First Semester

- PHY 441 - Physical Electronics Laboratory Credits: 2
- PHY 454 - Electricity and Magnetism I Credits: 3
- PHY 476 - Mathematical Methods in Physics Credits: 3  
See Footnote 7
- Engineering Sequence IV<sup>2</sup> Credits: 3
- Human Values/Social Context and Ethics Elective IV<sup>3</sup> Credits: 3

### Third Year - Second Semester

- PHY 442 - Modern Experimental Physics Credits: 2
- PHY 455 - Electricity and Magnetism II Credits: 3
- Engineering Sequence V<sup>2</sup> Credits: 3
- MAT Elective<sup>4</sup> Credits: 3
- Human Values/Social Context and Ethics Elective V<sup>3</sup> Credits: 3

### Fourth Year - First Semester

- PHY 400 - Career Preparation in Physics and Engineering Physics II Credits: 1
- PHY 469 - Quantum and Atomic Physics Credits: 3
- PHY 481 - Project Laboratory in Physics I Credits: 3
- PHY Elective I<sup>5</sup> Credits: 3
- Engineering Sequence VI<sup>2</sup> credits: 3
- Human Values/Social Context and Ethics Elective VI<sup>3</sup> Credits: 3

### Fourth Year - Second Semester

- PHY 482 - Project Laboratory in Physics II Credits: 3
- Technical Elective<sup>6</sup> Credits: 3
- Engineering Sequence VII and VIII<sup>2</sup> Credits: 6
- PHY Elective II<sup>5</sup> Credits: 3

### Special Requirements:

<sup>1</sup> Other course substitutions require the permission of the student's academic advisor and approval of the Chair.

<sup>2</sup> The Engineering Sequence consists of at least eight three-credit engineering courses, of which a maximum of seven courses are from the engineering concentration: Chemical and Biological, Civil and Environmental, Electrical and Computer, or Mechanical, and one course from an engineering area other than your engineering concentration. Engineering Technology courses cannot be used for the Engineering sequence, nor the technical electives. Engineering sequence courses can not be used for either the computer programming elective or the technical elective. All students must take either ECE 209, Fundamentals of Electric Circuits, or ECE 210 (Electrical Networks I). Students concentrating in electrical or computer engineering will need to take ECE 210, a pre-requisite for upper level ECE courses.

<sup>3</sup> 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.

<sup>4</sup> Choose from MAT 262, MAT 332, MAT 434, MAT 452, 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.

<sup>5</sup> The two physics electives can be any physics or astronomy course at the 400 level or higher. Students may elect to take PHY 462, Physical Thermodynamics, instead of MEE 230, Thermodynamics I; however, PHY 462 can not be used as one of the eight required Engineering sequence courses.

<sup>6</sup> A technical elective can be an Astronomy, Physics, Engineering, Chemistry, Mathematics, Computer Science or other approved science course, at the 300-level or higher.

<sup>7</sup> PHY 476 can be used as one of the courses needed to obtain a minor in mathematics, provided it is the only non-MAT course used for the minor.

## Physics Electives

For more detail, please see <http://physics.umaine.edu/undergraduate-programs/degree-programs/>

### Fall Semester

- AST 451 - Astrophysics Credits: 1-3  
(may be offered in either spring or the fall semester)
- PHY 462 - Physical Thermodynamics Credits: 3 - 4
- PHY 470 - Nuclear Physics Credits: 2
- PHY 471 - Nuclear Physics Laboratory Credits: 1
- PHY 495 - Engineering Physics Practice Credits: 1-6
- PHY 501 - Mechanics Credits: 3

### Spring Semester

- PHY 447 - Molecular Biophysics Credits: 3 - 4
- PHY 463 - Statistical Mechanics Credits: 3
- PHY 472 - Geometrical and Fourier Optics Credits: 3
- PHY 480 - Physics of Materials Credits: 3
- PHY 495 - Engineering Physics Practice Credits: 1-6

## Biological Engineering Option in Engineering Physics - Required Courses in Suggested Sequence first two years

### First Year - First Semester

- CHY 121 - Introduction to Chemistry Credits: 3
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- MAT 126 - Calculus I Credits: 4
- PHY 100 - Introduction to Physics and Astronomy Credits: 1
- PHY 121 - Physics for Engineers and Physical Scientists I Credits: 4
- Human Values/Social Context and Ethics Elective I Credits: 3

### First Year - Second Semester

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

### Second Year - First Semester

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

### Second Year - Second Semester

- BIO 100 - Basic Biology Credits: 4
- MAT 259 - Differential Equations Credits: 3
- PHY 200 - Career Preparation in Physics and Engineering Physics I Credits: 1
- PHY 223 - Special Relativity Credits: 1
- PHY 230 - Physical Measurements Laboratory II Credits: 2
- PHY 238 - Mechanics Credits: 3
- Human Values/Social Context and Ethics Elective II Credits: 3

## Chemical Engineering Option in Engineering Physics - Required Courses in Suggested Sequence first two years

### First Year - First Semester

- CHY 121 - Introduction to Chemistry Credits: 3
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- MAT 126 - Calculus I Credits: 4
- PHY 100 - Introduction to Physics and Astronomy Credits: 1
- PHY 121 - Physics for Engineers and Physical Scientists I Credits: 4
- Human Values/Social Context and Ethics Elective Credits: 3

### First Year - Second Semester

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

### Second Year - First Semester

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

### Second Year - Second Semester

- CHE 385 - Chemical Engineering Thermodynamics I Credits: 3
- MAT 259 - Differential Equations Credits: 3
- PHY 200 - Career Preparation in Physics and Engineering Physics I Credits: 1
- PHY 223 - Special Relativity Credits: 1
- PHY 230 - Physical Measurements Laboratory II Credits: 2
- PHY 238 - Mechanics Credits: 3
- Human Values/Social Context and Ethics Elective Credits: 3

## Civil and Environmental Engineering Options in Engineering Physics - Required Courses in Suggested Sequence first two years

### First Year- First Semester

- CHY 121 - Introduction to Chemistry Credits: 3
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- MAT 126 - Calculus I Credits: 4
- PHY 100 - Introduction to Physics and Astronomy Credits: 1
- PHY 121 - Physics for Engineers and Physical Scientists I Credits: 4
- Human Values/Social Context and Ethics Elective Credits: 3

### First Year - Second Semester

- COS 220 - Introduction to C++ Programming Credits: 3
- ENG 101 - College Composition Credits: 3
- MAT 127 - Calculus II Credits: 4
- MEE 150 - Applied Mechanics: Statics Credits: 3
- PHY 122 - Physics for Engineers and Physical Scientists II Credits: 4

### Second Year - First Semester

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

### Second Year Second Semester

- CIE 225 - Transportation Engineering Credits: 3
- MAT 259 - Differential Equations Credits: 3
- PHY 200 - Career Preparation in Physics and Engineering Physics I Credits: 1
- PHY 223 - Special Relativity Credits: 1
- PHY 230 - Physical Measurements Laboratory II Credits: 2
- PHY 238 - Mechanics Credits: 3
- Human Values/Social Context and Ethics Elective III Credits: 3

## Computer Engineering Options in Engineering Physics - Required Courses in Suggested Sequence first two years

### First Year - First Semester

- CHY 121 - Introduction to Chemistry Credits: 3
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- MAT 126 - Calculus I Credits: 4
- PHY 100 - Introduction to Physics and Astronomy Credits: 1
- PHY 121 - Physics for Engineers and Physical Scientists I Credits: 4
- Human Values/Social Context and Ethics Elective I Credits: 3

### First Year - Second Semester

- COS 220 - Introduction to C++ Programming Credits: 3
- ECE 177 - Introduction to Programming for Engineers Credits: 4
- ENG 101 - College Composition Credits: 3
- MAT 127 - Calculus II Credits: 4
- PHY 122 - Physics for Engineers and Physical Scientists II Credits: 4

### Second Year - First Semester

- ECE 210 - Electric Circuits Credits: 4
- MAT 228 - Calculus III Credits: 4
- PHY 229 - Physical Measurements Laboratory I Credits: 2
- PHY 236 - Introductory Quantum Physics Credits: 3
- Human Values/Social Context and Ethics Elective II Credits: 3

### Second Year - Second Semester

- ECE 271 - Microcomputer Architecture and Applications Credits: 3
- MAT 259 - Differential Equations Credits: 3
- PHY 200 - Career Preparation in Physics and Engineering Physics I Credits: 1
- PHY 223 - Special Relativity Credits: 1
- PHY 230 - Physical Measurements Laboratory II Credits: 2
- PHY 238 - Mechanics Credits: 3
- Human Values/Social Context and Ethics Elective III Credits: 3

## Electrical Engineering Options in Engineering Physics - Required Courses in Suggested Sequence first two years



## First Year -First Semester

- CHY 121 - Introduction to Chemistry Credits: 3
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- MAT 126 - Calculus I Credits: 4
- PHY 100 - Introduction to Physics and Astronomy Credits: 1
- PHY 121 - Physics for Engineers and Physical Scientists I Credits: 4
- Human Values/Social Context and Ethics Elective I Credits: 3

## First Year -Second Semester

- COS 220 - Introduction to C++ Programming Credits: 3
- ECE 177 - Introduction to Programming for Engineers Credits: 4
- ENG 101 - College Composition Credits: 3
- MAT 127 - Calculus II Credits: 4
- PHY 122 - Physics for Engineers and Physical Scientists II Credits: 4

## Second Year -First Semester

- ECE 210 - Electric Circuits Credits: 4
- MAT 228 - Calculus III Credits: 4
- PHY 229 - Physical Measurements Laboratory I Credits: 2
- PHY 236 - Introductory Quantum Physics Credits: 3
- Human Values/Social Context and Ethics Elective II Credits: 3

## Second Year -Second Semester

- ECE 214 - Electrical Circuits Laboratory Credits: 2
- ECE 314 - Signals and Systems Credits: 3
- MAT 259 - Differential Equations Credits: 3
- PHY 200 - Career Preparation in Physics and Engineering Physics I Credits: 1
- PHY 223 - Special Relativity Credits: 1
- PHY 230 - Physical Measurements Laboratory II Credits: 2
- PHY 238 - Mechanics Credits: 3

## Mechanical Engineering Option in Engineering Physics - Required Courses in Suggested Sequence first two years

### First Year - First Semester

- CHY 121 - Introduction to Chemistry Credits: 3
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- MAT 126 - Calculus I Credits: 4
- PHY 100 - Introduction to Physics and Astronomy Credits: 1
- PHY 121 - Physics for Engineers and Physical Scientists I Credits: 4
- Human Values/Social Context and Ethics Elective I Credits: 3

## First Year - Second Semester

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

## Second Year - First Semester

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

## Second Year - Second Semester

- ECE 209 - Fundamentals of Electric Circuits Credits: 3
- MAT 259 - Differential Equations Credits: 3
- MEE 230 - Thermodynamics I Credits: 3
- PHY 200 - Career Preparation in Physics and Engineering Physics I Credits: 1
- PHY 223 - Special Relativity Credits: 1
- PHY 230 - Physical Measurements Laboratory II Credits: 2
- PHY 238 - Mechanics Credits: 3

# Mechanical Engineering

## OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 130

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** None.

**Other GPA requirements to graduate:** 2.0 GPA in all MEE courses

**Required Course(s) for fulfilling Capstone Experience:** MEE 487 and MEE 488

**Contact Information:** Mohsen Shahinpoor, Professor and Chair, 5711 Boardman Hall, Tel: 581 2143, email: mohsen.shahinpoor@maine.edu

The mission of the Department of Mechanical Engineering is to educate men and women to be future leaders in industry, academia, and government; to conduct basic and applied research in mechanical engineering and related interdisciplinary fields; and, to provide service to the engineering profession, to the State of Maine, to the country, and to the future development of engineering. 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.

The objectives of the Mechanical Engineering Program are:

1. Prepare students to become professional practitioners of mechanical engineering;
2. To provide the students with a solid foundation in mechanical engineering;
3. To educate students to become aware of their moral, ethical, legal and professional obligations and to hold paramount the safety, health and welfare of the public;
4. To develop fundamental science, mathematics, computer, and engineering knowledge necessary for mechanical engineering;
5. To ensure that the students obtain a solid educational background in mechanical engineering so that they are nationally competitive and successful in their chosen profession and are prepared for future graduate training. Train students to develop the ability to function in the workplace through teamwork and effective communication;
6. To provide broad education to understand the relationship between mechanical engineering and, other engineering professionals and society as a whole;
7. To prepare students to communicate facts and ideas;
8. To prepare and encourage students to continue learning beyond the undergraduate years;

In summary, 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, college, and university requirements and course prerequisites to satisfy scheduling needs or student preferences.

The curriculum has ten elective courses among the 41 courses (131 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, if not part of the 18 credits in HVSC electives. Lists of courses qualifying for these electives are available in the Department of Mechanical Engineering

Office, 219 Boardman Hall. 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 Mechanical engineering (MEE designator) courses. The B.S. Program in Mechanical Engineering is accredited by the Engineering Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012 - telephone: (410) 347-7700.

### **Cooperative "Work Experience" Program**

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.

## **Required Courses in Suggested Sequence 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 Department of 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**

- ECP 101 - Technical Writing for Mechanical Engineers I Credits: 1 (Footnote 1)
- ENG 101 - College Composition Credits: 3
- MAT 126 - Calculus I Credits: 4
- MEE 101 - Introduction to Mechanical Engineering Credits: 1
- PHY 121 - Physics for Engineers and Physical Scientists I Credits: 4
- Human Values and Social Context Elective Credits: 3 (Footnote 2)

### **First Year - Second Semester**

- A Computer Programming Course Credits: 3 or 4 (Footnote 3)
- MAT 127 - Calculus II Credits: 4
- MEE 150 - Applied Mechanics: Statics Credits: 3
- PHY 122 - Physics for Engineers and Physical Scientists II Credits: 4
- Human Values and Social Context Elective Credits: 3

## Second Year - First Semester

- CHY 121 - Introduction to Chemistry Credits: 3
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- MAT 228 - Calculus III Credits: 4
- MEE 230 - Thermodynamics I Credits: 3
- MEE 251 - Strength of Materials Credits: 3
- Human Values and Social Context Elective Credits: 3

## Second Year - Second Semester

- ECE 209 - Fundamentals of Electric Circuits Credits: 3
- MAT 258 - Introduction to Differential Equations with Linear Algebra Credits: 4
- MEE 231 - Thermodynamics II Credits: 3
- MEE 270 - Applied Mechanics: Dynamics Credits: 3
- Basic Science Elective Credits: 4 (Footnote 4)

## Third Year - First Semester

- STS 332 - Statistics for Engineers Credits: 3
- MEE 360 - Fluid Mechanics Credits: 3
- MEE 370 - Modeling, Analysis and Control of Mechanical Systems Credits: 3
- MEE 380 - Design I Credits: 3
- Human Values and Social Context Elective Credits: 3

## Third Year - Second Semester

- ECP 341 - Technical Writing for Mechanical Engineers I Credits: 1
- MEE 320 - Materials Engineering and Science Credits: 3
- MEE 341 - Mechanical Laboratory I Credits: 3
- MEE 381 - Design II Credits: 3
- MEE 456 - Introduction to the Finite Element Method Credits: 3
- MEE 471 - Mechanical Vibrations Credits: 3

## Fourth Year - First Semester

- MEE 432 - Heat Transfer Credits: 3
- MEE 442 - Mechanical Laboratory II Credits: 2
- MEE 487 - Design III Credits: 4
- Engineering Science Elective Credits: 3 (Footnote 5)
- Mechanical Engineering Design Elective Credits: 3 (Footnote 6)

## Fourth Year - Second Semester

- ECP 488 - Technical Writing for Mechanical Engineers III Credits: 1
- MEE 443 - Mechanical Laboratory III Credits: 2
- MEE 488 - Design IV Credits: 4
- MEE Mechanical Engineering Design Elective
- Human Values and Social Context Elective
- Human Values and Social Context Elective

## Special Requirements and Footnotes:

<sup>1</sup>General education requirements mandate English 101 and two writing intensive courses. ECP 101, ECP 341 and ECP 488 are designated as writing intensive courses within the MEE major. NOTE: MEE 101 must be taken concurrently with ECP 101, MEE 341 must be taken concurrently with ECP 341, and MEE 488 must be taken concurrently with ECP 488.

<sup>2</sup>Students are assisted by faculty advisors in developing an elective program to meet their individual needs within the University's general education requirements. While most of the general education requirements are automatically met with a mechanical engineering degree, a student is required to select an additional 18 credit hours of electives to meet the "Human Values and Social Context" requirement (including ethics).

<sup>3</sup>Either one of the following courses are acceptable:

COS 215 - Introduction to Computing Using FORTRAN, Credits: 3

COS 220 - Introduction to C++ Programming, Credits: 3

ECE 177 – Introduction to Programming for Engineers, Credits: 4

<sup>4</sup>Courses that will satisfy the Approved Science Elective are but are not limited to: AST 109/110 (General Astronomy I with Lab), BIO 100 (Basic Biology), BIO 208 (Anatomy and Physiology), BIO 326 (General Entomology), BMB300/305 (General Microbiology with lab), CHY 122/124 (The Molecular basis Of Chemical Change), CHY 132/134 (Applications of Chemistry with Laboratory), ERS 101 (Intro to Geology), ERS 102 (Environmental Geology of Maine), ERS XXX (Geology for Engineers), PHY 223/PHY 236 (Special Relativity/Introductory Quantum Physics).

<sup>5</sup>Acceptable Engineering Science Electives include but are not limited to: MEE 444 (Robot Dynamics and Control), MEE 445 (Aeronautics), MEE 446 (Astronautics), MEE 447 (Flight Dynamics and Control), MEE 450 (Intro to Mechanics of Composite Materials), MEE 453 (Experimental Mechanics), MEE 455 (Advanced Strength of Materials) and MEE462 (Fluid Mechanics II)

<sup>6</sup>Acceptable Design Electives include but are not limited to: MEE 433 (Solar-Thermal Engng), MEE 434 (Thermodynamic Design of Engines), MEE 444 (Robot Dynamics and Control), MEE 445 (Aeronautics), MEE 446 (Astronautics), MEE 447 (Flight Dynamics and Control), MEE483 (Turbomachine Design), MEE484 (Power Plant Design and Engineering), and either MEE 485 (heating and Ventilation System design) or MEE 486 (Refrigeration & Air Conditioning Systems Design).

Students may use these courses to broaden their knowledge base or to specialize in areas like engineering design, dynamic systems control, smart materials and structures, computer software, CAD/CAM and robotics, biomedical engineering, computer graphics, energy, cultural diversity, ethics and artistic and creative works.

**Fundamentals of Engineering (FE) Examination** - Students are recommended (but not required) to take the FE examination in their senior year before graduation.

## Mechanical Engineering Technology

## **OVERVIEW OF DEGREE REQUIREMENTS**

**Minimum number of credits required to graduate:** 128

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** The 4-course math sequence (MAT122, TME152, TME253, TME354) requires a C or better in each class to move on to the next class.

**Other GPA requirements to graduate:** MET Majors must accumulate a GPA of 2.0 in all required MET classes.

**Required Course(s) for fulfilling Capstone Experience:** MET 462 and MET 463 and MET 464 and MET 465

**Contact Information:** Prof. Karen Horton, 211 Boardman Hall, (207) 581-2136

The UMaine Mechanical Engineering Technology program prepares students for a broad range of engineering activities including the development, design, testing, and manufacturing of products; the design, operation and maintenance of processes, and technical sales and marketing. The scope of mechanical engineering technology includes transportation, power generation, energy conversion, climate control, machine design, manufacturing and automation, and the control of engineering systems and devices. The specific program 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**

In their first year students learn to create 3D computer models and communicate with 2D drawings. Then they learn to bring drawings to reality in our workshop. Students acquire math and science skills through a structured math sequence and courses in physics and chemistry.

The second and third years build a solid foundation of engineering knowledge and skills. Topics include heat and work, materials, support and motion of rigid bodies and fluids, manufacturing processes, and electrical circuits. Students also learn to write and speak about technical issues as well as measure all things mechanical.

In the fourth year students learn how to design complex mechanisms, then apply all their learnings to a senior capstone project. The capstone project is widely regarded because students find a real-world problem, design a solution, then build and test their design.

Students are urged to work in a technical job during each summer recess. If the job meets certain requirements students may obtain 3 hours of co-operative education degree credit via MET 394.

The MET program is accredited by Engineering Technology Accreditation Commission of ABET.

### **Student Outcomes**

Prior to graduation, students are required to demonstrate the following learned capabilities:

- a. an ability to select and apply the knowledge, techniques, skills, and modern tools of the discipline to broadly-defined engineering technology activities
- b. an ability to select and apply a knowledge of mathematics, science, engineering, and technology to engineering technology problems that require the application of principles and applied procedures or methodologies
- c. an ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes
- d. an ability to design systems, components, or processes for broadly-defined engineering technology problems appropriate to program educational objectives
- e. an ability to function effectively as a member or leader on a technical team
- f. an ability to identify, analyze, and solve broadly-defined engineering technology problems;
- g. an ability to apply written, oral, and graphical communication in both technical and non-technical environments; and an ability to identify and use appropriate technical literature
- h. an understanding of the need for and an ability to engage in self-directed continuing professional development
- i. an understanding of and a commitment to address professional and ethical responsibilities including a respect for diversity
- j. a knowledge of the impact of engineering technology solutions in a societal and global context
- k. a commitment to quality, timeliness, and continuous improvement.

### **Computers**

Incoming students are required to have a laptop computer. Visit our website for requirements.

## **Required Courses in Suggested Sequence for the B.S. in Mechanical Engineering Technology**

### **First Year - First Semester**

- ENG 101 - College Composition Credits: 3
- MET 100 - Introduction to Mechanical Engineering Technology Credits: 2
- MET 121 - Technical Drawing Credits: 3
- PHY 107 - Technical Physics I Credits: 4
- MAT 122 - Pre-Calculus Credits: 4

### **First Year - Second Semester**

- MET 107 - Machine Tool Laboratory I Credits: 3
- MET 126 - Machine Drawing Credits: 3
- MET 150 - Statics Credits: 3
- PHY 108 - Technical Physics II Credits: 4



- TME 152 - Introductory Calculus for Engineering Technology Credits: 3

## Second Year - First Semester

- EET 330 - Electrical Applications Credits: 4
- MET 219 - Strength of Materials Credits: 4
- MET 233 - Thermal Science Credits: 3
- MET 270 - Manufacturing Technology Credits: 3
- TME 253 - Applied Calculus for Engineering Technology Credits: 4

## Second Year - Second Semester

- CMJ 103 - Fundamentals of Public Communication Credits: 3<sup>1</sup>
- COS 120 - Introduction to Programming I Credits: 3
- MET 213 - Introduction to CAM Credits: 2
- MET 234 - Mechanical Technology Laboratory I Credits: 3
- MET 236 - Thermal Applications Credits: 3
- Free Elective (Please take WEL 161, Welding from EMCC) Credits:1

## Third Year - First Semester

- CHY 121 - Introduction to Chemistry Credits: 3
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- ENG 317 - Business and Technical Writing Credits: 3
- MET 312 - Machine Tool Processing II Credits: 3
- MET 317 - Dynamics Credits: 4
- MET Laboratory-based Technical Elective<sup>2</sup> Credits: 3

## Third Year - Second Semester

- MET 325 - Fluid Flow Technology Credits: 3
- MET 355 - Engineering Materials Credits: 3
- TME 354 - Ordinary Differential Equations With Engineering Applications Credits: 3
- MET Technical Elective<sup>2</sup> Credits: 3
- Cultural Diversity and International Perspectives Elective<sup>1</sup> Credits: 3

## Fourth Year - First Semester

- MET 462 - Design I Credits: 3
- MET 464 - Senior Design Project I Credits: 2
- MET 484 - Engineering Economics Credits: 3
- Population and the Environment Elective<sup>1</sup> Credits: 3

- Western Cultural Tradition Elective<sup>1</sup> Credits: 3
- MET Technical Elective<sup>2</sup> Credits: 3

## Fourth Year - Second Semester

- MET 463 - Design II Credits: 3
- MET 465 - Senior Design Project II Credits: 2
- Artistic and Creative Expression Elective<sup>1</sup> Credits: 3
- Ethics Elective<sup>1</sup> Credits: 3
- Technical Elective Credits: 3

Student must see their advisor for approval of all electives.

<sup>1</sup>These 6 courses provide the required distribution of 18 General Education credits so long as the Ethics Elective also satisfies one of the 5 General Education sub-categories. These 6 courses do not have to be taken in the semesters or order shown.

<sup>2</sup>Three technical electives must be chosen from a list of approved Mechanical Engineering Technology or Electrical Engineering Technology courses, one of which must include a laboratory component. General Education and Technical Elective course lists are available in 119 Boardman Hall.

## Pulp and Paper Technology

**Please note:** This major is currently suspended for potential elimination and is not accepting new students. Students currently in this major should refer to the catalog in effect when they entered the program.

## Survey Engineering Technology

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 126

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** The three course math sequence (MAT122, TME152, TME253) requires a "C" or better in each class to move to the next class.

**Other GPA requirements to graduate:** SVT majors must accumulate a GPA of 2.0 in all required SVT classes.

**Required Course(s) for fulfilling Capstone Experience:** SVT 490

**Contact Information:** Prof. Raymond Hintz, 125 Boardman Hall; (207)581-2189; raymond.hintz@umit.maine.edu

The Survey 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 Survey 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. The specific program educational objectives are to prepare graduates to:

- Demonstrate a practical understanding of skills in mathematics, basic physical sciences, business, surveying, and engineering sufficient to pass professional registration exams.
- Show proficiency in using surveying equipment and gathering experimental and surveying data for the use of analytical and problem-solving skills reasonably expected for surveying practice necessary to be in responsible charge of surveying operations.
- Be able to apply design skills sufficient to meet employer and client expectations in the areas of land development and survey operations planning.
- Conduct themselves ethically and professionally and exhibit personal integrity and responsibility in surveying practice.
- Be proficient in written, oral, and graphic communication to deal with promotion of professional services, business communications, reporting to clients, interacting with peers, and addressing client matters in public forums.
- Awareness for the arts, humanities, social sciences, and diversity and their place among society and the profession in taking leadership roles in the community and profession.
- Be able to work in a multi-disciplinary team environment, and lead when necessary to accomplish a given mission or project when providing professional services to the public.
- Recognize, participate, and appreciate the need for quality improvement of services, continuous improvement of professional skills, and embarking on lifelong learning.

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.

Degrees are awarded upon satisfactory completion of 126 credits at an accumulative grade point average of not less than 2.0 overall. Students must also achieve at least a 2.0 grade point average in all required SVT/CET courses. The SVT program is accredited by Engineering Technology Accreditation Commission of ABET, [www.abet.org](http://www.abet.org)

The recommended sequence of the four-year curriculum is outlined below. Copies can be obtained in the School of Engineering Technology office.

### **Student Outcomes**

Prior to graduation, students are required to demonstrate the following learned capabilities:

- a. an ability to select and apply the knowledge, techniques, skills, and modern tools of the discipline to broadly-defined engineering technology activities
- b. an ability to select and apply a knowledge of mathematics, science, engineering, and technology to engineering technology problems that require the application of principles and applied procedures or methodologies
- c. an ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes
- d. an ability to design systems, components, or processes for broadly-defined engineering technology problems appropriate to program educational objectives

- e. an ability to function effectively as a member or leader on a technical team
- f. an ability to identify, analyze, and solve broadly-defined engineering technology problems
- g. an ability to apply written, oral, and graphical communication in both technical and non-technical environments; and an ability to identify and use appropriate technical literature
- h. an understanding of the need for and an ability to engage in self-directed continuing professional development
- i. an understanding of and a commitment to address professional and ethical responsibilities including a respect for diversity
- j. a knowledge of the impact of engineering technology solutions in a societal and global context
- k. a commitment to quality, timeliness, and continuous improvement.

### **Computers**

Incoming students are required to have a laptop computer. Visit our website at [www.umaine.edu/set](http://www.umaine.edu/set) for recommended configuration details.

### **Special Option for foreign students receiving a BS in Surveying Engineering Technology (SVT)**

The courses,

- SVT 221 Boundary Surveying 3 cr.,
- SVT 322 Preparing Effective Property Descriptions 1 cr.,
- SVT 329 Site Planning and Subdivision Design 1 cr.,
- SVT 418 Fundamentals of Surveying Exam Overview 1 cr.,
- Fundamentals of Surveying Exam 0 cr. required for graduation,

are preparation for licensure as a land surveyor in the United States and may not apply to a foreign student who plans on surveying outside of the United States. Therefore it is possible for a foreign student to substitute for the course from the following list. The total number of credits taken from this list must equal or exceed 6 credits. Note these courses are also program electives but in this case cannot be counted towards that total if substituting for the above 6 credits.

- CET 413 Static & Strengths of Materials 4 cr.
- CET 414 Structural Design 4 cr.
- CIE 110/11 Materials & Materials Lab 4 cr.
- EET 111 Circuit Analysis I 4 cr.
- EET 330 Electrical Applications 4 cr.
- MET 433 Thermodynamics 3 cr.
- any SIE course (adding to Geographic Information Systems knowledge)

Obviously a foreign student can choose the present curriculum taken by U.S. students. These substitutions must be approved by the SVT program coordinator before they are taken.

## **Suggested Curriculum for the B.S. in Surveying Engineering Technology**

### **First Year - First Semester**

- CMJ 103 - Fundamentals of Public Communication Credits: 3
- COS 103 - Introduction to Spreadsheets Credits: 1
- MAT 122 - Pre-Calculus Credits: 4
- PHY 107 - Technical Physics I Credits: 4
- SVT 100 - Introduction to Surveying Technology Credits: 1
- SVT 110 - Instrumentation and Data Collectors Credits: 1
- SVT 121 - AutoCAD for Surveyors I Credits: 3

## First Year - Second Semester

- CET 101 - Plane Surveying Credits: 3  
(See Footnote 3)
- ENG 101 - College Composition Credits: 3
- PHY 108 - Technical Physics II Credits: 4
- TME 152 - Introductory Calculus for Engineering Technology Credits: 3

## Second Year - First Semester

- CET 202 - Construction Surveying Credits: 3
- STS 215 - Introduction to Statistics for Business and Economics Credits: 3  
or
- STS 232 - Principles of Statistical Inference Credits: 3
- SVT 122 - AutoCAD for Surveyors II Credits: 3  
See Footnote 5
- TME 253 - Applied Calculus for Engineering Technology Credits: 4
- Artistic and Creative Expression Elective Credits: 3  
(See Footnote 2)
- Program Elective Credits: 3

## Second Year - Second Semester

- CET 332 - Civil Engineering Technology Credits: 3
- ENG 212 - Persuasive and Analytical Writing Credits: 3  
(See Footnote 4)
- SVT 201 - Adjustment Computations Credits: 3
- SVT 221 - Boundary Law Credits: 3  
(See Footnote 5)
- SVT 331 - Photogrammetry Credits: 3

## Third Year - First Semester

- BUA 201 - Principles of Financial Accounting Credits: 3
- ENG 317 - Business and Technical Writing Credits: 3

- SVT 322 - Preparing Effective Property Descriptions Credits: 1  
SVT Majors must take the in class section
- SVT 329 - Site Planning and Subdivision Design Credits: 1
- SVT 341 - Advanced Surveying Credits: 3
- Law or Environmental Elective (BUA 220 or CET 451) Credits: 3
- Population and the Environment Elective Credits: 3  
(See Footnote 2)

### Third Year - Second Semester

- Advanced Communication Elective Credits: 3  
(See Footnote 6)
- ECO 120 - Principles of Microeconomics Credits: 3  
or
- ECO 121 - Principles of Macroeconomics Credits: 3
- SVT 352 - Practical Field Operations Credits: 3
- Cultural Diversity Elective Credits: 3  
(See Footnote 2)
- Program Elective Credits:3  
(See Footnote 1)

### Fourth Year - First Semester

- MET 484 - Engineering Economics Credits: 3
- SVT 418 - Fundamentals of Surveying Exam Overview Credits: 1
- SVT 437 - Practical GPS Credits: 3
- SVT 475 - Small Business Management Credits: 3
- Program Elective Credits: 3  
(See Footnote 1)
- Program Elective Credits: 3  
(See Footnote 1)

### Fourth Year - Second Semester

- SFR 400 - Applied Geographic Information Systems Credits: 4  
or
- ECO 473 - Economic and Policy Applications of GIS Credits: 3
- SVT 490 - Surveying Capstone Credits: 3
- Program Elective Credits: 3  
(See Footnote 1)
- Program Elective Credits: 4  
(See Footnote 1)
- Ethics Elective Credits: 1  
(See Footnote 1)
- Fundamentals Surveying Exam (passing not required) Credits: 0

Students must see their advisor for approval of all electives.

<sup>1</sup>Lists of approved courses that meet the General Education requirements and Program Electives are available in 119 Boardman Hall.

<sup>2</sup>General Education Requirement Electives do not have to be taken in the order shown. One of the Human Values/Social Context electives must fulfill the Ethics requirement. List of approved courses that meet the General Education requirements are available in 119 Boardman Hall.

<sup>3</sup>May substitute SFR 208 - Geomatics, Coordinate Geometry, and GPS with permission of advisor.

<sup>4</sup>ENG 417, ENG 418, and ENG 496 can be substituted for ENG 212 - Persuasive and Analytical Writing - only with advisor approval.

<sup>5</sup>SVT 221 fulfills Western Cultural Traditions Elective.

<sup>6</sup>Communication classes such as CMJ201, CMJ202, CMJ236, CMJ250, CMJ257, CMJ324, CMJ345, CMJ347, CMJ367 may fulfill the Advanced Communication elective.

<sup>7</sup>Students can switch CET202 and Eng212

## Minor

# Minor: Biomedical Engineering

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 19

**GPA requirements to earn minor:** 2.0

**Minimum Grade requirements for courses to count toward minor:** No grades below C-.

**Contact Information:** Mohsen Shahinpoor, Professor and Chair, 219 Boardman Hall, 207-581-2143, mohsen.shahinpoor@maine.edu

The curriculum seeks to introduce engineering students to the growing applications of engineering in the field of biomedical engineering. This minor is important for students who want to get involved with applications of engineering tools to medicine and surgery and especially in connection with robotic surgery and medical implants. The future job prospects look great in connection with these disciplines.

### Core Courses (9-11 credit hours)

- BIO 208 - Anatomy and Physiology Credits: 4
- INT 121 - (CHB) Introduction to Biomedical Engineering Credits: 1

- INT 421 - (CHB) Directed Study in Biomedical Engineering Credits: 1-3
- PHI 235 - Biomedical Ethics Credits: 3

## Lecture/Laboratory Course Pairs

The student must select one of the following lecture/laboratory course pairs (4-5 cr.):

- BMB 221 - Organic Chemistry Credits: 3
- BMB 222 - Laboratory in Organic Chemistry Credits: 1  
or
- BMB 300 - General Microbiology Credits: 3
- BMB 305 - General Microbiology Laboratory Credits: 2  
or
- BMB 322 - Biochemistry Credits: 3
- BMB 323 - Biochemistry Laboratory Credits: 2  
or
- CHY 251 - Organic Chemistry I Credits: 3
- CHY 253 - Organic Chemistry Laboratory I Credits: 2

## Optional Courses (minimum 6 credit hours)

- BLE 497 - Special Problems in Bioengineering Credits: Ar
- CHE 498 - Special Topics in Chemical Engineering Credits: 1-3
- ECE 314 - Signals and Systems Credits: 3  
(See Footnote 2)
- ECE 343 - Electronics II Credits: 4
- ECE 417 - Introduction to Robotics Credits: 3
- ECE 465 - Introduction to Sensors Credits: 3
- MEE 270 - Applied Mechanics: Dynamics Credits: 3  
(See Footnote 1 and 3)
- MEE 320 - Materials Engineering and Science Credits: 3  
(See Footnote 3)
- MEE 453 - Experimental Mechanics Credits: 3
- MEE 471 - Mechanical Vibrations Credits: 3
- PHY 447 - Molecular Biophysics Credits: 3 - 4

<sup>1</sup>cannot be used for minor by students in BLE program

<sup>2</sup>cannot be used for minor by students in ECE program

<sup>3</sup>cannot be used for minor by students in MEE program

## Minor: Computer Engineering

### OVERVIEW OF DEGREE REQUIREMENTS



**Minimum number of credits required to earn minor: 19**

**GPA requirements to earn minor: 2.0**

**Minimum Grade requirements for courses to count toward minor: No grades below C-.**

**Contact Information:** Donald Hummels, Professor and Chair, 101 Barrows Hall, (207) 581 -2223, donald.hummels@maine.edu

**PLEASE NOTE: This minor is not available to Electrical Engineering and/or Computer Engineering majors.**

The Computer Engineering Minor is designed to provide engineering majors outside of the Department of Electrical and Computer Engineering (ECE) and students from other disciplines an introduction to the wide-ranging content of the computer engineering major. The minor consists of 13 credit hours of required courses and a minimum of six credit hours of ECE elective courses.

## Core Courses (13 credit hours)

- ECE 177 - Introduction to Programming for Engineers Credits: 4
- ECE 271 - Microcomputer Architecture and Applications Credits: 3
- ECE 275 - Sequential Logic Systems Credits: 3
- ECE 331 - Introduction to Unix Systems Administration Credits: 3

## Examples of Optional Courses: (Six credit hours minimum)

Generally any Computer focused 300 or 400 level ECE course counts as an optional course.

- ECE 417 - Introduction to Robotics Credits: 3
- ECE 471 - Embedded Systems Credits: 3
- ECE 473 - Computer Architecture and Organization Credits: 4
- ECE 477 - Hardware Applications Using C Credits: 3
- ECE 478 - Industrial Computer Control Credits: 3
- ECE 486 - Digital Signal Processing Credits: 4
- ECE 498 - Selected Topics in Electrical and Computer Engineering Credits: 1-3

## Note for Computer Science Majors

For students majoring in Computer Science:

- ECE 177 can be substituted by COS 225 (Introduction to Object Oriented Programming and Design) Credits: 4
- ECE 271 can be substituted by COS 235 (Computer Organization and Architecture) Credits: 4
- ECE 331 can be substituted by COS 431 (Operating Systems) Credits: 3

## Minor: Construction Engineering Technology

## **OVERVIEW OF DEGREE REQUIREMENTS**

**Minimum number of credits required to earn minor: 18**

**GPA requirements to earn minor: 2.0**

**Minimum Grade requirements for courses to count toward minor: No grades below C-.**

**Contact Information:** Philip Dunn, Coordinator, Construction Engineering Technology, 132 Boardman Hall, 207-581 -2326, philip.dunn@umit.maine.edu

**PLEASE NOTE: This minor is not available to Construction Engineering Technology majors.**

A minor in Construction Engineering Technology requires at least 18 credit hours in construction management program courses. The courses must include three credits of estimating and bidding and three credits in planning and scheduling. The remaining courses must be selected from construction management (CET) courses required in the Construction Engineering Technology curriculum. Approval of a course of study by a Construction Engineering Technology faculty advisor is required.

**Core courses: 6 Credits**

- CET 360 - Construction Estimating and Bidding Credits: 3
- CET 462 - Construction Planning and Scheduling Credits: 3

**Examples of Optional Courses: Minimum of 12 Credits**

- CET 101 - Plane Surveying Credits: 3
- CET 202 - Construction Surveying Credits: 3
- CET 221 - Construction Methods Credits: 3
- CET 356 - Construction Documents and Administration Credits: 3
- CET 451 - Construction Law Credits: 3

## **Minor: Electrical Engineering**

### **OVERVIEW OF DEGREE REQUIREMENTS**

**Minimum number of credits required to earn minor: 22**

**GPA requirements to earn minor: 2.0**

**Minimum Grade requirements for courses to count toward minor: No grades below C-.**

**Contact Information:** Donald Hummels, Chair and Castle Professor, 101 Barrows Hall, 207-581-2223, donald.hummels@maine.edu

**PLEASE NOTE: This minor is not available to Electrical Engineering and/or Computer Engineering majors.**

The Electrical Engineering Minor is designed to provide engineering majors outside of the Department of Electrical and Computer Engineering (ECE) and students from other disciplines an introduction to the wide-ranging content of the electrical engineering major. The minor consists of 15 credit hours of required courses and a minimum of six credit hours of ECE elective courses.

### Core Courses: (16 credit hours)

- ECE 177 - Introduction to Programming for Engineers Credits: 4
- ECE 210 - Electric Circuits Credits: 4
- ECE 214 - Electrical Circuits Laboratory Credits: 2
- ECE 275 - Sequential Logic Systems Credits: 3
- ECE 314 - Signals and Systems Credits: 3

### Examples of Optional Courses: (6 credit hours minimum)

Generally, any 300 or 400 level ECE course can be used as an optional course

- ECE 316 - Random Signal Analysis Credits: 3
- ECE 342 - Electronics I Credits: 4
- ECE 343 - Electronics II Credits: 4
- ECE 351 - Fields and Waves Credits: 3
- ECE 417 - Introduction to Robotics Credits: 3
- ECE 427 - Electric Power Systems Credits: 3
- ECE 453 - Microwave Engineering Credits: 4
- ECE 462 - Introduction to Basic Semiconductor Devices and Associated Circuit Models Credits: 3
- ECE 464 - Microelectronics Science and Engineering Credits: 3
- ECE 450 - Power Electronics Credits: 3
- ECE 451 - Power Electronics Lab Credits: 1
- ECE 455 - Electric Drives Credits: 3
- ECE 456 - Electric Drives Lab Credits: 1
- ECE 465 - Introduction to Sensors Credits: 3

## Minor: Electrical Engineering Technology

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 18-19

**GPA requirements to earn minor:** 2.0

**Minimum Grade requirements for courses to count toward minor:** No grades below C-

**Contact Information:** Judith Pearse, Coordinator, Electrical Engineering Technology, 7 Barrows Hall, 207-581-2346, jude.pearse@umit.maine.edu

**PLEASE NOTE: This minor is not available to Electrical Engineering Technology majors.**

A minor in Electrical Engineering Technology provides students with a thorough, hands-on approach to electrical systems. From troubleshooting to basic design skills, this minor covers such topics as circuit theory, electronics, and industrial control systems - all taught with a focus on practical application. Through classroom interaction and a significant laboratory component, students with an Electrical Engineering Technology Minor are prepared to be immediately productive in such fields as Power and Energy as well as Industrial Manufacturing.

## Core Courses (18-19 credit hours)

- EET 111 - Circuit Analysis I Credits: 4  
or
- ECE 209 - Fundamentals of Electric Circuits Credits: 3  
or
- EET 112 - Circuit Analysis II Credits: 4
- EET 174 - Introduction to Microcomputers Credits: 4  
or
- EET 241 - Analog Circuit Fundamentals Credits: 4  
or
- EET 321 - Electro-Mechanical Energy Conversion Credits: 4
- EET 276 - Programmable Logic Controllers Credits: 4  
Note: EET 275 - Digital Systems - As a prerequisite for EET 276, will be waived for those seeking an EET minor
- EET 386 - Project Management Credits: 3

## Minor: Engineering Entrepreneurial

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** 2.0

**Minimum Grade requirements for courses to count toward minor:** No grades below C-.

**Contact Information:** Judith Pearse, Coordinator, Electrical Engineering Technology, 7 Barrows Hall, 207-581-2346, jude.pearse@umit.maine.edu

The Engineering Entrepreneurial Minor provides engineering students with a "big-picture" perspective on business and how to approach non-technical issues in today's work environments. Initially requested by several key industry advocates, this minor

shows engineering students how their skills may be best utilized in a business situation. With a focus on such coursework as project management, business law, economics, and small business management, students are provided with a unique business perspective that makes them highly valuable in today's workforce.

## Required Courses:

With permission of the administrator of the minor, a student can substitute other courses for the following courses.

- BUA 201 - Principles of Financial Accounting Credits: 3
- BUA 220 - The Legal Environment of Business Credits: 3  
(See Footnote 1)
- ECO 120 - Principles of Microeconomics Credits: 3  
or
- ECO 121 - Principles of Macroeconomics Credits: 3
- EET 386 - Project Management Credits: 3  
(See Footnote 2)
- MET 484 - Engineering Economics Credits: 3  
(See Footnote 3)
- SVT 475 - Small Business Management Credits: 3

<sup>1</sup>CET 451 - Construction Law Credits: 3 has been approved by BUA to substitute for BUA 220

<sup>2</sup>Students may substitute CET 462 - Construction Planning and Scheduling Credits: 3 or CIE 413 - Project Management Credits: 2 (plus one credit), for this course

<sup>3</sup>Students may substitute CIE 412 - Engineering Decisions Credits: 2 plus CIE 410 - Engineering Ethics Credits: 1

## Minor: Engineering Leadership and Management

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** 2.0

**Minimum Grade requirements for courses to count toward minor:** No grades below C-.

**Contact Information:** Momamad T. Musavi, Associate Dean, College of Engineering, 205 AMC, 207-581-2218, musavi@maine.edu

The Engineering Leadership and Management Minor provides undergraduate engineering and engineering technology majors with skills that are essential to long-term career advancement. Moreover, the carefully selected skills that comprise the minor are highly sought after by employers of our graduates. The minor includes a course, Engineering Leadership and Management Internship, where students will put their skills to the test in real-world businesses. Students will learn how leaders deal with people and inspire others to enthusiastically and willingly achieve the vision and goals of the organization. Students will learn how leaders play a fundamental role in setting the organization's vision and goals. As a manager, students will learn how to effectively apply relevant experience, knowledge, and resources for the efficient and timely completion of operations or tasks to achieve success for the organization.

**Note:** Most of the courses included in this minor have prerequisites. Some of the prerequisites qualify as Human Values and Social Contexts (HVSC) electives. Students should strategically use their HVSC electives to satisfy these prerequisites.

## Required courses

- GEE 230 - Introduction to Engineering Leadership and Management Credits: 1
- GEE 430 - Engineering Leadership and Management Internship Credits: 3

## Select courses from each of the following categories:

### Communication - Choose 1

- CMJ 257 - Business and Professional Communication Credits: 3
- CMJ 345 - Small Group Communication: Service-Learning Credits: 3

### Decision Making - Choose 1

- BUA 325 - Principles of Management and Organization Credits: 3
- CET 458 - Management of Construction Credits: 3
- CHB 350 - Statistical Process Control and Analysis Credits: 3
- CHB 477 - Elements of Chemical Engineering and Bioengineering Design Credits: 3
- CIE 412 - Engineering Decisions Credits: 2
- CIE 413 - Project Management Credits: 2
- CMJ 347 - Argument and Critical Thinking Credits: 3
- EET 386 - Project Management Credits: 3
- MET 484 - Engineering Economics Credits: 3

### Leadership - Choose 2

- NAV 304 - Leadership and Ethics Credits: 3
- PSY 251 - Psychology of Motivation Credits: 3

### Professionalism and Ethics - Choose 1

- PHI 232 - Environmental Ethics Credits: 3

- PHI 233 - Business Ethics Credits: 3

## **Minor: Environmental Engineering**

# **OVERVIEW OF DEGREE REQUIREMENTS**

**Minimum number of credits required to earn minor:** 25

**GPA requirements to earn minor:** 2.0

**Minimum Grade requirements for courses to count toward minor:** No grade below C-.

**Contact Information:** Dr. Hemant Pendse, Chair, Chemical and Biological Engineering

The Environmental Engineering Minor is open to all students wishing to demonstrate a focus on environmental engineering. Many engineers find themselves faced with environment issues in many projects and would benefit by having a fundamental knowledge of environmental engineering.

### **Prerequisite Courses (8 credits)**

- CHY 121 - Introduction to Chemistry Credits: 3  
with
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- CHY 122 - The Molecular Basis of Chemical Change Credits: 3  
with
- CHY 124 - The Molecular Basis of Chemical Change Laboratory Credits: 1

### **Core Courses (13 credits)**

- BLE 201 - Fundamentals of Bioengineering Credits: 4  
or
- CHE 200 - Fundamentals of Process Engineering Credits: 4
- CHY 251 - Organic Chemistry I Credits: 3
- CIE 331 - Fundamentals of Environmental Engineering Credits: 3
- CIE 350 - Hydraulics Credits: 3  
or
- MEE 360 - Fluid Mechanics Credits: 3  
or
- CHE 360 - Elements of Chemical Engineering I Credits: 4

## Elective Courses (12 credits minimum)

- CHE 368 - Kinetics and Reactor Design Credits: 3
- CIE 430 - Water Treatment Credits: 4
- CIE 431 - Pollutant Fate and Transport Credits: 4
- CIE 434 - Wastewater Process Design Credits: 4
- CIE 439 - Solid Waste and Air Pollution Credits: 3
- CIE 450 - Open Channel Hydraulics Credits: 3
- CIE 455 - Hydrology Credits: 3
- CIE 456 - Groundwater Hydrology and Hydraulics Credits: 3
- ECO 377 - Introduction to Natural Resource Economics and Policy Credits: 3
- ECO 381 - Sustainable Development Principles and Policy Credits: 3
- EES 324 - Environmental Protection Law and Policy Credits: 3

## Minor: Mechanical Engineering

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 21

**GPA requirements to earn minor:** 2.0

**Minimum Grade requirements for courses to count toward minor:** No grades below C-.

**Contact Information:** Mohsen Shahinpoor, Chair, 119 Boardman Hall, 207-581-2143, mohsen.shahinpoor@maine.edu

PLEASE NOTE: This minor is not available to Mechanical Engineering majors.

The Mechanical Engineering Minor is designed to provide majors outside of the Department of Mechanical Engineering a fundamental introduction to the mechanical engineering field, allowing them to interact more successfully with mechanical engineers on team projects. The minor consists of 15 credit hours of required courses and a minimum of six credit hours of MEE elective courses.

## Core Courses: (15 credit hours)

- MEE 150 - Applied Mechanics: Statics Credits: 3
- MEE 230 - Thermodynamics I Credits: 3
- MEE 251 - Strength of Materials Credits: 3
- MEE 270 - Applied Mechanics: Dynamics Credits: 3
- MEE 360 - Fluid Mechanics Credits: 3



## Examples of Optional Courses: (6 credit hours minimum)

- MEE 320 - Materials Engineering and Science Credits: 3
- MEE 370 - Modeling, Analysis and Control of Mechanical Systems Credits: 3
- MEE 432 - Heat Transfer Credits: 3
- MEE 433 - Solar-Thermal Engineering Credits: 3
- MEE 445 - Aeronautics Credits: 3
- MEE 446 - Astronautics Credits: 3
- MEE 450 - Mechanics of Composite Materials Credits: 3
- MEE 455 - Advanced Strength of Materials Credits: 3
- MEE 456 - Introduction to the Finite Element Method Credits: 3
- MEE 462 - Fluid Mechanics II Credits: 3
- MEE 471 - Mechanical Vibrations Credits: 3
- MEE 483 - Turbomachine Design Credits: 3
- MEE 484 - Power Plant Design and Engineering Credits: 3

## Minor: Mechanical Engineering Technology

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 19

**GPA requirements to earn minor:** 2.0

**Minimum Grade requirements for courses to count toward minor:** No more than one grade less than a C-

**Contact Information:** S. David Dvorak, Machine Tool Lab, Room 114, 207-581-2338, david.dvorak@umit.maine.edu

### Core Courses

- MET 150 - Statics Credits: 3  
or
- MEE 150 - Applied Mechanics: Statics Credits: 3
  
- MET 219 - Strength of Materials Credits: 4  
or
- MEE 251 - Strength of Materials Credits: 3
  
- MET 317 - Dynamics Credits: 4

- **or**
- MEE 270 - Applied Mechanics: Dynamics Credits: 3
  
- MET 433 - Thermodynamics Credits: 3
- **Note:**
- MET 233 - Thermal Science Credits: 3
- **and**
- MET 236 - Thermal Applications Credits: 3 (both required)
- **or**
- MEE 230 - Thermodynamics I Credits: 3 can be taken in place of MET 433
- METXXX Credits: 3
- METXXX Credits: 3

## Electives (6 credits)

- MET 107 - Machine Tool Laboratory I Credits: 3
- MET 121 - Technical Drawing Credits: 3
- MET 126 - Machine Drawing Credits: 3
- MET 213 - Introduction to CAM Credits: 2
- MET 234 - Mechanical Technology Laboratory I Credits: 3
- MET 270 - Manufacturing Technology Credits: 3
- MET 313 - CAD / CAM Projects Credits: 3
- MET 320 - Selected Topics in Mechanical Engineering Technology II Credits: 1-3
- MET 321 - Industrial Vibrations Credits: 3
  
- MET 325 - Fluid Flow Technology Credits: 3
- **or**
- MEE 360 - Fluid Mechanics Credits: 3
  
- MET 327 - Automotive Engineering Credits: 3
- MET 355 - Engineering Materials Credits: 3
- MET 391 - Heating, Ventilating and Air Conditioning Credits: 3
- MET 394 - Mechanical Engineering Technology Practice Credits: 3
- MET 427 - Energy Management Credits: 3
- MET 462 - Design I Credits: 3
- MET 463 - Design II Credits: 3
- MET 475 - Fuel Cell Science and Technology Credits: 3

The School of Engineering Technology must approve the minor of any substitutions other than those listed above. To elect a minor, the student should complete a Declaration of Minor form available in Room 119 Boardman Hall or your department office.

## Minor: Military Science and Leadership

## **OVERVIEW OF DEGREE REQUIREMENTS**

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** 2.0

**Minimum Grade requirements for courses to count toward minor:** No grades below C-.

**Contact Information:** Paulette Ferland, Administrative Associate, 114 Armory, 207-581-1121,  
UMArmyROTC@umit.maine.edu

The Military Science and Leadership Minor develops undergraduate students organizational and management skills necessary to lead in the 21st century. The minor uses practical application and hands on learning to develop core competencies such as mental agility, communications, and developing others. The minor focuses on leadership skills that get results using a professional ethos framework that emphasizes mission accomplishment, innovation and teamwork. Students will understand the importance of a manager's ability to develop goals and communicate a vision in order to create a cohesive organization that is committed to lifelong learning, bonded together by trust and teamwork. At the end of a Cadet's Junior year, each cadet is required to attend LDAC (Leadership Development and Assessment Course). Students successfully completing this minor will have the opportunity to earn a commission as a Second Lieutenant in the United States Army.

**Note:** Most courses included in this minor have prerequisites that may be met through multiple options. The capstone is only required for students pursuing a commission.

### **Required Courses:**

- MSL 105 - Leadership and Physical Fitness Credits: 1
- MSL 301 - Adaptive Team Leadership Credits: 3
- MSL 302 - Applied Team Leadership Credits: 3
- MSL 350 - The Evolution of American Warfare Credits: 3
- or
- HTY 278 - American Military History Credits: 3
- or
- American Military History course approved by Professor of Military Science Credits: 3
- MSL 401 - Mission Command and the Army Profession Credits: 4
- MSL 402 - Mission Command and the Company Grade Officer Credits: 4

## **Minor: Nanotechnology**

## **OVERVIEW OF DEGREE REQUIREMENTS**

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** 2.0

**Minimum Grade requirements for courses to count toward minor:** No grades below C-.

**Contact Information:** Dr. Rosemary Smith, Professor, Electrical & Computer Engineering

The Nanotechnology minor will comprise both fundamental and specialized coursework preparation for undergraduate students who engage in nanoscale research and/or who wish to pursue a career in nanotechnology.

### **Prerequisite Courses**

Only as specified by each individual core and elective course required for the minor.

## **Core Courses (9 credit hours)**

- CHY 477 - Nanoscience Credits: 3  
or
- ECE 457 - Nanoscience Credits: 3
  
- CHE 420 - Colloid Technology Credits: 3  
or
- PHY 236 - Introductory Quantum Physics Credits: 3
  
- HON 398 - Honors Independent Research Credits: 1-3  
or
- INT 398 - (CHB, CHY, ECE) Undergraduate Research Participation Credits: 1-3

The undergraduate research must pertain to nanoscale science or engineering. A research proposal must be submitted to the academic advisor for the minor for review and be approved for acceptance of fulfillment of this requirement for the minor.

A student may choose either PHY236 or CHE 420 to fulfill the core course requirements for this minor. The choice will likely depend on the student's major, research project and/or interests. PHY 236 is excellent preparation for all students who are interested in nanotechnology, but is especially relevant for those who are interested in nanoscale electronic devices and materials (e.g. ECE and Engr Phys majors). Students who are interested in nanoparticle synthesis and properties (e.g. BLE and CHE majors) are recommended to take CHE 420. These courses are also on the list of elective courses, so that a student may take both courses, applying one towards fulfilling the core course requirements and the other towards fulfilling the elective course requirements.

## **Elective Courses: 3 courses**

(9 credit hours selected from the courses below:)

As described above, students must take either PHY 236 or CHE 420 as a core course for the minor. At least three courses, in addition to either PHY 236 or CHE 420 must be taken from the list below.

- BLE 402 - Biomaterials and the Cellular Interface Credits: 3
- CHB 460 - Biochemical Engineering Credits: 3
- CHE 410 - Advanced Materials Credits: 3

- CHE 420 - Colloid Technology Credits: 3
- ECE 462 - Introduction to Basic Semiconductor Devices and Associated Circuit Models Credits: 3
- ECE 464 - Microelectronics Science and Engineering Credits: 3
- EES 324 - Environmental Protection Law and Policy Credits: 3
- GEE 298 - Introduction to Nanoscale Science and Engineering Credits: 3
- GEE 398 - Special Topics in Engineering Credits: Ar
- MEE 320 - Materials Engineering and Science Credits: 3
- MEE 450 - Mechanics of Composite Materials Credits: 3
- PHY 236 - Introductory Quantum Physics Credits: 3
- PHY 447 - Molecular Biophysics Credits: 3 - 4
- PHY 469 - Quantum and Atomic Physics Credits: 3

## Other Conditions

Students may petition to apply Engineering Practice (e.g. ECE 394 or MEE 394) or Engineering Physics Practice (PHY 495) credit in place of undergraduate research credit, if the work experience involves Nanotechnology. The academic advisors for the minor will review the student's petition, which will include a description of the work experience and a letter from his/her employer, and determine if it qualifies.

## Minor: Naval Science

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor: 23**

**GPA requirements to earn minor: 2.0**

**Minimum Grade requirements for courses to count toward minor: No grades below C-.**

**Contact Information:** Joshua Firkin, Assistant Professor of Naval Science, 378 College Ave, 207-581-1551, nrotc@mma.edu

The Naval Science Minor allows students at the University of Maine the opportunity to complement their education with a Navy training experience. The Naval Science courses are specifically designed to prepare University of Maine students participating in the NROTC program for their future careers as Comissioned Officers in the United States Navy and United States Marine Corps. By completing these Naval Science courses, students will gain applied knowledge in various areas including Personnel Management, Warfare Tactics, Engineering Systems and Navigation with a strong overall emphasis on leadership. Many of these Naval Science courses may be beneficial to University of Maine students pursuing any type of career in a leadership position and a couple courses even fulfill general education requirements, but it is advised to carefully read the course description or contact the instructor before enrolling in the course.

## Core Courses

- NAV 101 - Introduction to Naval Science Credits: 2
- NAV 102 - Naval Ships Systems I (Engineering) Credits: 3
- NAV 201 - Naval Ships Systems II (Weapons) Credits: 3

- NAV 202 - Sea Power and Maritime Affairs Credits: 3
- NAV 303 - Leadership and Management Credits: 3
- NAV 304 - Leadership and Ethics Credits: 3

## Additional Courses

Choose one of the following combinations: (6 credits)

- NAV 301 - Navigation and Naval Operations I Credits: 3  
with
- NAV 302 - Navigation and Naval Operations II Credits: 3  
OR
- NAV 310 - Evolution of Warfare Credits: 3  
with
- NAV 410 - Amphibious Warfare Credits: 3

## Minor: Ocean and Marine Engineering

OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor: 21**

**GPA requirements to earn minor: 2.0**

**Minimum Grade requirements for courses to count toward minor: None**

**Contact Information:**

The minor in Ocean and Marine Engineering is a collection of courses that provide the student with fundamental and applied knowledge of the vast ocean and marine resources available on this planet. Emphasis is placed on responsible and sustainable engineering for extracting resource extraction from the ocean. The core and elective options include courses from engineering as well as physical and marine sciences.

### Required Core Courses (15 credits)

- CIE 350 - Hydraulics Credits: 3  
**OR**
- MEE 360 - Fluid Mechanics Credits: 3  
**OR**
- MET 325 - Fluid Flow Technology Credits: 3
  
- CIE 394 - Civil Engineering Practice Credits: 1-3  
**OR**
- MEE 394 - Mechanical Engineering Practice Credits: 3  
**OR**
- MET 394 - Mechanical Engineering Technology Practice Credits: 3

- CIE 498 - Selected Studies in Civil Engineering Credits: 1-3  
Topic: Coastal Engineering  
or  
Topic: Offshore Geotechnics and Foundation design
- MEE 489 - Offshore Floating System Design Credits: 3
- SMS 302 - Oceanography Credits: 3

## Elective Courses (at least 6 credits)

- CIE 365 - Soil Mechanics Credits: 3
- CIE 460 - Geotechnical Engineering Credits: 3
- CIE 480 - Wind Energy Engineering Credits: 3
- OR**
- MEE 480 - Wind Energy Engineering Credits: 3
  
- MEE 450 - Mechanics of Composite Materials Credits: 3
- MEE 456 - Introduction to the Finite Element Method Credits: 3
- MEE 471 - Mechanical Vibrations Credits: 3
- MET 321 - Industrial Vibrations Credits: 3
- NA 372 Naval Architecture I (Maine Maritime Academy) Credits: 3
- NA 430 Naval Architecture II (Maine Maritime Academy) Credits: 3

## Professional Practice

Students earn credits for CIE 394, MEE 394 and MET 394 by completing a summer internship. University of Maine has entered into an education partnership agreement with the US Department of Navy, which entitles students to preferentially apply for internships through their website. Students may alternatively find internships at the Advanced Structures and Composites Center, or with companies in Maine and elsewhere.

## Minor: Power

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 19

**GPA requirements to earn minor:** 2.0

**Minimum Grade requirements for courses to count toward minor:** No grades below C-.

**Contact Information:** Donald Hummels, Chair and Catle Professor, 101 Barrows Hall, 207-581 -2223,  
donald.hummels@maine.edu

**PLEASE NOTE: This minor is not available to Electrical Engineering and/or Computer Engineering majors.**

The objective of Power minor is to educate students about generation and delivery of electric energy. There are four core sources from which the first two provide fundamental knowledge in understanding electrical circuits and networks and the last two deal with generation and conversion, transmission and distribution, design and analysis of power and energy systems. The optional courses provide complementary and related knowledge in design, control, and application of power and energy systems. Taking this minor will prepare students for working in the power utility industry, construction industry, submarine and aircraft manufacturing, and/or attending graduate school for research and development in smart grid and other electric energy related technologies.

## Core courses: 9 or 10 Credits

- ECE 209 - Fundamentals of Electric Circuits Credits: 3  
or
- ECE 210 - Electric Circuits Credits: 4
- ECE 427 - Electric Power Systems Credits: 3
- ECE 450 - Power Electronics Credits: 3  
or
- ECE 455 - Electric Drives Credits: 3

## Examples of Optional Courses: Minimum of 9 Credits using ECE 210 or Minimum of 10 Credits using ECE 209

- ECE 314 - Signals and Systems Credits: 3
- ECE 414 - Feedback Control Systems Credits: 3
- ECE 450 - Power Electronics Credits: 3  
(If not used as a required)
- ECE 451 - Power Electronics Lab Credits: 1
- ECE 455 - Electric Drives Credits: 3  
(If not used as a required)
- ECE 456 - Electric Drives Lab Credits: 1

## Minor: Process Engineering

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor: 21**

**GPA requirements to earn minor: 2.0**

**Minimum Grade requirements for courses to count toward minor: None.**

**Contact Information:** Hemant Pendse, Chair, 115 Jenness Hall, 207-581-2290, pendse@maine.edu



**PLEASE NOTE: This minor is not available to Chemical Engineering majors.**

The objective of the Process Engineering minor is to prepare students to work in process manufacturing industries such as semiconductors, foods, pharmaceuticals, plastics, petrochemical, pulp and paper, and bioprocessing. The first course covers basic process calculations used to account for materials and energy used in production processing. The subsequent courses cover design of unit operations such as pumps, heat exchangers, chemical reactors, and chemical separators. Students completing this minor will be able to understand the operation of and analyze the performance of process equipment in a production facility. For science and engineering major outside the traditional process industries the minor will give a broad understanding of the considerations involved in process engineering analysis.

## Required Courses:

- CHE 200 - Fundamentals of Process Engineering Credits: 4
- CHE 352 - Process Control Credits: 3
- CHE 360 - Elements of Chemical Engineering I Credits: 4
- CHE 362 - Elements of Chemical Engineering II Credits: 4
- CHE 368 - Kinetics and Reactor Design Credits: 3
- CHE 385 - Chemical Engineering Thermodynamics I Credits: 3
- or
- CHE 386 - Chemical Engineering Thermodynamics II Credits: 3

## Minor: Renewable Energy Engineering

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** 2.0

**Minimum Grade requirements for courses to count toward minor:** None.

**Contact Information:** David Dvorak, Coordinator, Professor of Mechanical Engineering Technology, 119 Boardman Hall

The Renewable Energy Engineering minor provides students an introduction to the wide-ranging issues concerning the production, distribution, consumption, and impacts of energy, with a particular focus on the design and implementation of existing and emerging technologies. This program complements numerous engineering majors and helps to prepare students for careers in this innovative field. The minor includes 18 credit hours of coursework, 9 hours of which are required core courses.

### Required Core Course (9 credits)

- ECO 405 - Sustainable Energy Economics & Policy Credits: 3
- ECE 498 - Selected Topics in Electrical and Computer Engineering Credits: 1-3  
Topic: Electrical Circuits, Power and Machinery

(NOTE: Students may substitute ECE 498 with either 1) EET 323 and either EET 111 or EET 112, or 2) ECE 323 and either ECE 210 or ECE 211)

- INT 489 - Advanced Topics in Interdisciplinary Studies Credits: 3  
Topic: Introduction to Renewable Energy Engineering  
(NOTE: Students may substitute INT 489 with EET 498, Topic: Renewable Energy and Electricity Production, and one of the following: MET 236, MEE 231, MET 433 or CHE 385)

## Elective Courses (at least 9 credits)

- CHE 461 - Combustion and Fuel Processing Credits: 3
- CHE 498 - Special Topics in Chemical Engineering Credits: 1-3  
Topic: Lignocellulosic Biorefinery
- CIE 455 - Hydrology Credits: 3
- ECE 323 - Electric Power Conversion Credits: 3
- ECE 427 - Electric Power Systems Credits: 3  
or
- EET 323 - Power Systems Analysis Credits: 4
- ECE 498 - Selected Topics in Electrical and Computer Engineering Credits: 1-3  
Topic: Photovoltaic Devices and Systems
- EET 498 - Selected Topics in Electrical Engineering Technology Credits: 1-4  
Topic: Renewable Energy and Electricity Production
- MEE 433 - Solar-Thermal Engineering Credits: 3
- MEE 486 - Refrigeration and Air Conditioning System Design Credits: 3  
or
- MET 391 - Heating, Ventilating and Air Conditioning Credits: 3
- MET 475 - Fuel Cell Science and Technology Credits: 3  
or
- MEE 475 - Fuel Cell Science and Technology Credits: 3
- MEE 484 - Power Plant Design and Engineering Credits: 3
- Other courses with permission

## Minor: Robotics

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor: 21**

**GPA requirements to earn minor: 2.0**

**Minimum Grade requirements for courses to count toward minor: No grades below C-.**

**Contact Information:** Mohsen Shahinpoor, 219A Boardman Hall, (207)581-2143, mohsen.shahinpoor@maine.edu **or** Donald Hummels, Chair and Castle Professor, 101 Barrows Hall, (207)581-2223, donald.hummels@maine.edu

The robotics minor is designed to provide a fundamental understanding of robotic operation and preliminary training in design and use of robots. This minor is intended to equip the students with some fundamental knowledge and information on robotic manipulators, structures, systems and related applications. In particular, statics, kinematics, dynamics and control of robots will be covered in this minor. Robotic systems have wide application in modern technology and manufacturing. The students choosing this minor can also specialize, by completing special projects within the various courses, in certain aspects of intelligent robotics such as mobile walking robots, robotic vision, robotic surgery and surgical microrobots as well as the design and applications of robots for hazardous tasks and environments.

### Prerequisite Courses: (9-10 credit hours)

- MEE 150 - Applied Mechanics: Statics Credits: 3
- ECE 209 - Fundamentals of Electric Circuits Credits: 3  
or
- ECE 210 - Electric Circuits Credits: 4
- COS 220 - Introduction to C++ Programming Credits: 3  
or
- ECE 177 - Introduction to Programming for Engineers Credits: 4

### Core Courses: (9 credit hours)

- MEE 270 - Applied Mechanics: Dynamics Credits: 3
- ECE 417 - Introduction to Robotics Credits: 3
- MEE 444 - Robot Dynamics and Control Credits: 3

### Optional Courses: (12 credit hours minimum)

- MEE 370 - Modeling, Analysis and Control of Mechanical Systems Credits: 3
- MEE 380 - Design I Credits: 3
- ECE 414 - Feedback Control Systems Credits: 3
- ECE 478 - Industrial Computer Control Credits: 3

## Minor: Survey Engineering Technology

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor: 18**

**GPA requirements to earn minor: 2.0**

**Minimum Grade requirements for courses to count toward minor:** No grades below C-.

**Contact Information:** Ray Hintz, Coordinator, Surveying Engineering Technology, 125 Boardman Hall, 207-581-2189, raymond.hintz@umit.maine.edu

**PLEASE NOTE: This minor is not available to Survey Engineering Technology majors.**

The objective of the minor in Surveying Engineering Technology is to provide majors in a related discipline with the necessary knowledge for licensure as a land surveyor in Maine. As an example, an engineer could perform design, boundary survey, and construction survey in a development. A forester could survey a wood lot's boundary lines as part of a forestry function. A minor in Surveying Engineering Technology requires at least 18 credit hours in surveying program courses. The courses must include three credits of plane/basic surveying, three credits in advanced or construction surveying, and three credits in boundary law. The remaining courses must come from surveying, engineering, engineering technology, technical, legal, or ethical courses approved as program electives in the Surveying Engineering Technology curriculum. Approval of a Surveying Engineering Technology minor course of study by a surveying engineering technology faculty is required.

## Core Courses: 9 credits

- CET 101 - Plane Surveying Credits: 3  
(See Footnote 1)
- CET 202 - Construction Surveying Credits: 3  
(See Footnote 2)
- SVT 221 - Boundary Law Credits: 3

<sup>1</sup>SFR 208 may be substituted with permission of advisor

<sup>2</sup>CET 202 is highly recommended, but SVT 341 may be substituted

## Electives: 9 credits

- SFR 400 - Applied Geographic Information Systems Credits: 4
- Any SVT Course (excluding SVT 100)

# College of Liberal Arts & Sciences

The College of Liberal Arts and Sciences is dedicated to providing a sound education in the liberal arts and to imparting the specific knowledge and skills required for careers in one of its many representative disciplines. This education, both in its breadth and its approach to learning, leads students to an enlightened sense of themselves, their heritage, their world; prepares them for responsible and active citizenship; and prompts those habits of thought and expression crucial to a lifetime of active learning. A major goal of the college is to provide students with the ability to think independently, to analyze, and to solve problems creatively.

## ACADEMIC PROGRAMS:

### *Bachelor of Arts in:*

Anthropology  
Art Education  
Art History  
Chemistry  
Communication  
Computer Science  
English  
French  
German Major Suspended  
History  
Human Dimensions of Climate Change  
Interdisciplinary Studies  
International Affairs  
Journalism  
Latin Major Suspended  
Mass Communication  
Mathematics  
Modern Languages  
Music  
New Media  
Philosophy  
Physics  
Political Science  
Psychology  
Romance Languages  
Sociology  
Spanish  
Studio Art  
Theater  
Women's, Gender, and Sexuality Studies  
Bachelor of University Studies CLAS Pathway

### *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  
Archaeology  
Art History  
Astronomy  
Canadian Studies  
Chemistry  
Classical Studies  
Computer Science  
The Constitution and American Law  
Creative Writing  
Dance  
English  
Ethics, and Social and Political Philosophy  
Film and Video  
Folklore  
Franco American Studies  
French  
Geography  
German  
Graphic Design  
History  
International Affairs  
Jazz Studies  
Judaic Studies  
Latin  
Leadership Studies  
Legal Studies  
Marxist and Socialist Studies  
Mathematics  
Medieval and Renaissance Studies  
Music  
Native American Studies  
Philosophy  
Physics  
Political Science  
Political Theory  
Professional Languages  
Professional Writing  
Psychology  
Religious Studies  
Sociology  
Spanish  
Statistics  
Studio Art

Theatre  
Technical Theatre  
Women's, Gender, and Sexuality Studies

### **Institutional Credit Requirements:**

All majors in the College of Liberal Arts & Sciences require a minimum of 15 institutional credits in the major, and all minors require a minimum of 9. For purposes of this requirement, institutional credit is defined as all University of Maine (Orono) courses regardless of delivery method (face-to-face, online, ITV, etc).

Please note that some CLAS majors and minors may have more restrictive institutional credit requirements. Students wishing to pursue a particular CLAS major or minor should review the catalog information pertaining to the specific major or minor of interest.

### **College of Liberal Arts and Sciences Graduation Requirements:**

In order to graduate from the College of Liberal Arts and Sciences, the following must be satisfied:

1. Completion of all university-wide General Education requirements.
2. Completion of all requirements for a specific academic major within the college. Double majors and double degrees in closely related disciplines are not permitted. Questions regarding double majors and/or degrees should be addressed to the associate dean of the college.
3. A minimum cumulative grade point average of 2.0 ("C" average) in the major and overall.
4. A minimum total of 120 credits. *(Please note that some majors require more than 120 credits).*
5. For Bachelor of Arts students only, satisfactory completion of the B.A. Distribution Requirements (see text below).

### **Bachelor of Arts Distribution Requirements**

In order to ensure depth as well as breadth of study, the following rules apply to students seeking a Bachelor of Arts degree in the College of Liberal Arts and Sciences:

1. All students pursuing a B.A. degree must complete a minimum of 72 credits outside of the academic major.
2. All students pursuing a B.A degree are subject to the following credit limitations:

Students may count a maximum of 15 credits in military science (MSL) or naval science (NAV) toward the required 120. To count, credits must be at the upper (300-400) level, or if lower (100-200) level must be on the University's official list of approved general education courses. In no case may the combination of lower and upper level credits used toward the required 120 exceed the maximum allowance of 15.

A maximum of 2 physical education (KPE) skills credits may be used toward the 120 required for the B.A. degree. Examples of skills credits include golf, tennis, racquetball, etc.

3. A. Students matriculating effective Fall 2011 must complete an academic minor or a second academic major.  
  
B. Students matriculating before Fall 2011, with no more than a two year break in enrollment, may elect the newer requirement (3A) or meet the former requirement: they must complete nine upper level credits in an area outside the academic major that have not been presented to satisfy a University of Maine General Education requirement in Human Values & Social Contexts, Math and/or Science. Students in an interdisciplinary major should consult with their academic advisor or the college office for guidance. Note: upper level courses must be at the 200 level or above and must have a prerequisite course.

### **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. Undeclared students will be assigned to an advisor in the college's Advising Center. Contact information for advisors may be found on the student's Maine Street home page. The college urges students to make appointments to see their advisors (or an Assoc. Dean of the College) whenever they have academic concerns.

#### **Advising Center:**

The College of Liberal Arts and Sciences (CLAS) Advising Center opened in August 2012, the beneficiary of PRE-VUE grant approved by the University of Maine President, Dr. Paul W. Ferguson, and was a joint effort by CLAS and the Student Life.

The Advising Center was established out of a desire to increase student access, connection, satisfaction, and retention in the College of Liberal Arts and Sciences, providing the Center with a mission to address these goals by developing programs and resources for students who are considered "at-risk" (undecided, first-generation, and those in transition between majors and other institutions) and providing support and programming for all CLAS students and faculty advisors. The goal is to create a strong, student-centered advising program focused on student access, connection, satisfaction, and retention, and to enhance the quality of the undergraduate educational experience and student services.

#### **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 54 degree credits but may declare a major at any time prior to that.

#### **Changing Colleges:**

The College normally accepts all current University of Maine students from other baccalaureate programs who have a 2.0 cumulative grade point average and are in good academic standing on the effective date of change. Students in the Foundations Program must have a 2.5 GPA if they wish to be accepted after their first semester in Foundations.

In unusual circumstances, students who have less than a 2.0 cumulative grade point average may be allowed to change colleges. Students in this situation should discuss their request for change with the college associate dean.

#### **Foreign Language Requirements:**

Some majors have special language requirements for BA degree students, as follows: NOTE: Intermediate level proficiency, here, means the equivalent of two semesters of an intermediate level language course; e.g. SPA 203, 204.

- ART: 6 credits in one foreign language is required for students who major in Art History.
- COMMUNICATION: 3-6 credits from French, German, Spanish, American Sign Language or other language.
- ENGLISH: A minor in a second language is one option for an outside field requirement.
- HISTORY: Three years of a foreign language is one option for an outside field requirement.
- INTERNATIONAL AFFAIRS: Rating of "intermediate" on oral proficiency Interview (OPI). See International Affairs catalog copy for details.
- JOURNALISM: 3-6 credits from French, German, Spanish, American Sign Language or other language.
- MASS COMMUNICATION: 3-6 credits from French, German, Spanish, American Sign Language or other 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.
- THEATER: One semester of any language course (3 credits minimum).

#### **Language Competency and Placement Exams in Modern Languages:**

Finding the appropriate level at which to take a language course is essential for success. To assist in this determination, the Department of Modern Languages and Classics offers both competency and placement examinations in French and Spanish. Students with three or more years of study in high school may opt to attempt credit by examination (competency exam). A standard examination fee of \$125.00 is imposed on all competency exams offered at UMaine. However, students in a degree program and who are beginning their first semester of enrollment at UMaine receive a special, one-time exemption on competency exam fees up to the end of the first two weeks of enrollment. During this time, students may take available competency exams for a nominal administration fee of \$10.00. There is no charge for the placement exam.



The Department of Modern Languages and Classics does not give automatic credit if a student does not continue in the language at UMaine. Credit will be awarded for intermediate language only if a student is enrolled for at least one additional course and passes it with a grade of B- or higher. For example: if a student has tested out of FRE 202 or SPA 204, the student must successfully complete FRE 305 or SPA 305 or an equivalent course in order to receive credit.

Checks should be made payable to The University of Maine, and mailed or delivered to Alan Parks, Director of College Success Programs, 5725 East Annex, Room 118, The University of Maine, Orono, ME 04469-5725.

For further information, please contact the Department of Modern Languages and Classics, 5472 Little Hall, Room 201, The University of Maine, Orono, ME 04469-5742.

The Modern Languages and Classics Department accepts Advanced Placement Examinations in Foreign Languages and Literature for degree credit. See the Advanced Placement Credit table under University Requirements.

### **Critical Languages Program:**

The department of Modern Languages and Classics offers Arabic, Mandarin Chinese, Farsi, Hindi, Irish Gaelic, Italian, Japanese, Korean, Portuguese and Russian under the Critical Languages Program. This program uses a self-instructional method for language learning. The major responsibility belongs to the student, who works with a native speaker tutor. There are three hours of drills a week, in small tutorials, usually 3 to 5 students.

The University of Maine is a member of NASILP ( National Association of Self-Instructional Language Programs), a coordinating and consulting entity founded in the 1970's. The method used is loosely based on the one used by the Foreign Service Institute. It is effective because it requires active, committed learning by students. At the early stage of language acquisition, the most important thing is to practice, learn material thoroughly, have accurate linguistic models, and appropriate, adequate materials. The Critical Languages Program has all of these features. For more information, contact the coordinator of the Critical Languages Program, at (207) 581-2078.

### **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. 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 session. Students may also participate in the Conversation Partners Program. The IEI endorses the TESOL Standards for Post secondary Programs and the NAFSA Principles of International Educational Exchange.

The IEI offers a one week TESOL Certificate Program for students wishing to work abroad or simply develop a better understanding of the TESOL profession.

The courses offered at the IEI in any particular semester vary according to enrollment and the placement levels of incoming students. The IEI accepts both matriculated and non-matriculated students.

### **The Open Field:**

The Open Field, an undergraduate literary annual, is edited and published by students in the Department of English. *Stolen Island* is an annual edited and published by graduate students in English.

### **Program Contacts**

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*School of Computing and Information Science*

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## Major

## Anthropology

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** ANT 101, 102, 300, 317 must be completed with a minimum grade of C- or better. ANT 493 must be completed with a minimum grade of C or better.

**Other GPA requirements to graduate:** A minimum accumulative GPA of 2.0 in the major.

**Required Course(s) for fulfilling Capstone Experience:** ANT 493

**Contact Information:** Gregory Zaro, Chair, Associate Professor of Anthropology and Climate Change, 5773 S. Stevens Hall,

Room 242 (207) 581-1857, Fax: (207) 581-1823, gregory.zaro@umit.maine.edu

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. Courses in biological/physical anthropology also are offered. In addition, the Department offers courses in folklore, oral history, and geography, which are closely related to anthropology.

#### **Departmental Notes:**

##### **Graduate Programs**

The Department of Anthropology cooperates with the Climate Change Institute to train graduate students in prehistoric archaeology towards an MS degree in Quaternary and Climate Studies. Application is made through the Graduate School.

The PhD in Anthropology and Environmental Policy Program centers on understanding human society and culture in cross-cultural perspective and their pivotal role in implementing successful environmental policy. The program engages students in a multi-disciplinary framework bridging environmental sciences and policy while focusing on the sociocultural impacts of, and responses to, local and global environmental change. Application is made through the Graduate School.

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, archaeology, law, social work, business, theology, library science, writing, museum work, nursing, computer programming, clinical psychology, education, economic development, 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**

The archaeology faculty focuses on ancient cultures and landscapes of the Americas and Mediterranean. A number of faculty are jointly appointed with the Canadian-American Center, the Climate Change Institute and Native American Studies. The cultural anthropologists have extensive field experience in the Middle East, Oceania, Latin America, and North America.

Periodically, the anthropology faculty offers field schools in 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 and laboratory projects, in the Maine Folklife Center, and the Hudson Museum of Anthropology.

##### **The Bachelor of Arts in Anthropology**

Students may declare an anthropology major in their first year, and must declare their major once they have accumulated 53 credits. It is desirable to begin taking anthropology courses in the first semester at the university.

First year students are advised to take ANT 101 (fall semester) and ANT 102 (spring semester), as these are both required for the major and are prerequisites for many upper division courses. Other 100 and 200 level courses in anthropology are relevant and may be taken in the first year. First year students also concentrate on completing General Education requirements.

ANT 300 and ANT 317 are both major requirements and should be taken as early as possible. ANT 300 is a required intensive course within the major and is limited to 15 majors of junior standing per semester. There is a waiting list for this course. Please sign up for the waiting list in the Anthropology Office, as soon as possible. The capstone course, ANT 493, is taken in the junior or senior year.

The requirements listed on this page are specific to this particular major. Students are also responsible for meeting any graduation requirements set out by their college. Students in the College of Liberal Arts and Sciences (CLAS) should make sure to review those requirements as stated on the College of Liberal Arts and Sciences page of the catalog.

## Requirements for Anthropology Majors

A minimum of 36 credits of anthropology or geography is required. In some cases, double majors may be able to apply six credits of collateral courses to the major. ANT 101, 102, 300, 317 must be completed with a minimum grade of C- or better. ANT 493 must be completed with a minimum grade of C or better.

- ANT 101 - Introduction to Anthropology: Human Origins and Prehistory Credits: 3
- ANT 102 - Introduction to Anthropology: Diversity of Cultures Credits: 3
- ANT 300 - Basic Theory in Cultural Anthropology Credits: 3
- ANT 317 - Fundamentals of Archaeology Credits: 3
- ANT 493 - Capstone in Anthropology: What does it mean to be human? Credits: 3
- ANT 300, 317, the Capstone course, and 9 other credits must be taken at UMaine

Because ANT 300 and ANT 317 are prerequisite to some advanced level courses, students should take them as early in their program as possible. Students writing an anthropology honors thesis do not have to take the capstone course, ANT 493.

Advanced study in anthropology normally requires use of quantitative methods and foreign language competency, and some theoretical sophistication. Consequently, students planning to do graduate work in anthropology should take a course in statistics, such as ANT 462 (Numerical Methods in Anthropology), and achieve foreign language competency at the intermediate level. A knowledge of statistics and one or more foreign languages is required in most Ph.D. programs in Anthropology. Those interested in graduate work in archaeology should take some 500 level courses in Anthropology.

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

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 125

**Minimum Cumulative GPA required to graduate:** 2.0.

**Minimum Grade requirements for courses to count toward major:** Art Education majors must have a "C" or better in each required major/minor courses taken.

**Other GPA requirements to graduate:** A minimum accumulative GPA of 2.0 ("C" ) in the major.

**Required Course(s) for fulfilling Capstone Experience:** 12 credits of EHD 494

**Contact Information:** Dr. Michael Grillo, Associate Professor, Chair, Department of Art, 107 Lord Hall, (207) 581-3246

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 (27 in required courses, 6 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.

The requirements listed on this page are specific to this particular major. Students are also responsible for meeting any graduation requirements set out by their college. Students in the College of Liberal Arts and Sciences (CLAS) should make sure to review those requirements as stated on the College of Liberal Arts and Sciences page of the catalog.

## Required Courses in Suggested Sequence for the B.A. in Art Education

### First Year - First Semester

- ARH 155 - Art and Visual Culture in the Ancient and Medieval Worlds Credits: 3
- or
- ARH 156 - Art and Visual Culture in the Modern Era Credits: 3
  
- ART 100 - Drawing I Credits: 3
  
- ART 110 - 2-D Design Credits: 3
- or
- ART 120 - 3-D Design Credits: 3

- ENG 101 - College Composition Credits: 3  
**or**
- PSY 100 - General Psychology Credits: 3
- General Education Requirement Credits: 3

## First Year - Second Semester

- ARH 155 - Art and Visual Culture in the Ancient and Medieval Worlds Credits: 3  
**or**
- ARH 156 - Art and Visual Culture in the Modern Era Credits: 3
- ART 110 - 2-D Design Credits: 3  
**or**
- ART 120 - 3-D Design Credits: 3
- ART 200 - Drawing II Credits: 3
- ENG 101 - College Composition Credits: 3  
**or**
- PSY 100 - General Psychology Credits: 3
- General Education Requirement Credits: 3

## Second Year - First Semester

- ART 225 - Ceramics I Credits: 3
- EHD 202 - Education in a Multicultural Society Credits: 3
- EHD 203 - Educational Psychology Credits: 3
- ART 200 level Studio Elective Credits: 3
- ARH 200 level Art History Course Credits: 3

## Second Year - Second Semester

- AED 270 - Introduction to Visual Culture and Learning Credits: 3
- ART 200 level Studio Elective Credits: 6
- ARH 200 level Art History Course Credits: 3
- General Education Requirement Credits: 3



### Third Year - First Semester

- AED 371 - Methods and Materials in Art Education Credits: 3
- AED 372 - Foundations of Art Education Credits: 3
- AED 373 - Introduction to Curriculum Credits: 3
- ART 300 level Studio Art courses Credits: 3
- ARH 300 level Art History course Credits: 3

### Third Year - Second Semester

- AED 473 - Advanced Curriculum in Art Education Credits: 3
- AED 474 - SL: Topics in Art Education Credits: 3
- ARH 451 - Art Theory and Criticism Credits: 3
- ART 300-400 level Studio Art course Credits: 3
- General Education or B.A.Degree Requirement Credits: 3-4

### Fourth Year - First Semester

- SED 302 - Adapting Instruction for Students with Disabilities Credits: 3
- ART 300-400 level Studio Art course Credits: 3
- ARH 300-400 level Art History course Credits: 3
- General Education Requirements Credits: 6-7

### Fourth Year - Second Semester

- EHD 494 - Student Teaching K-12 (Art or Music) Credits: 1 - 12
- Students should register for 12 credits

### Summer Session or Overload

- General Education Requirements Credits: 6-9

# Art History

## OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** Majors must have a "C-" or better in all required major (ARH) courses

**Other GPA requirements to graduate:** A minimum accumulative GPA of 2.0 ("C") in the major.

**Required Course(s) for fulfilling Capstone Experience:** ARH 499

**Contact Information:** Dr. Michael Grillo, Associate Professor, Chair, Department of Art, 107 Lord Hall, (207) 581-3246

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. The major highly recommends that its students enroll in the Honors College.

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.

## Required Courses in Suggested Sequence for the B.A. in Art History

### First Year - First Semester

- ARH 155 - Art and Visual Culture in the Ancient and Medieval Worlds Credits: 3
- Foreign Language Credits: 3
- General Education Requirements Credits: 6
- Electives Credits: 3

## First Year - Second Semester

- ARH 156 - Art and Visual Culture in the Modern Era Credits: 3
- Foreign Language Credits: 3
- General Education Requirements Credits: 6
- Electives Credits: 3

## Second Year - First Semester

- ARH 200 Level Credits: 3
- ART 100 Level Studio Art Requirement Credits: 3
- General Education Requirements Credits: 6-7
- Elective Credits: 3

## Second Year - Second Semester

- ARH 200 Level Credits: 6
- ART 100 Level Studio Art Requirement Credits: 3
- General Education Requirements Credits: 4
- Electives Credits: 3

## Third Year - First Semester

- ARH 200 Level Credits: 3
- ARH 300 or 400 Level Seminar Credits: 3
- Electives Credits: 9

## Third Year - Second Semester

- ARH 300 or 400 Level Seminar Credits: 6
- Electives Credits: 9

## Fourth Year - First Semester

- ARH 452 - Critical Methods in History of Art Credits: 3
- ARH 300 or 400 Level Seminar Credits: 3
- Electives Credits: 9

## Fourth Year - Second Semester

- ARH 451 - Art Theory and Criticism Credits: 3
- ARH 499 - Capstone Experience in History of Art Credits: 3
- ARH 300 or 400 level Seminar Credits: 3

- Electives Credits: 6

## Bachelor of University Studies, CLAS pathway

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0

**Other GPA requirements to graduate:** 2.0 GPA across coursework in focus areas

**Required Grade for fulfilling Capstone Experience:** A grade of C- or better in LAS 497

**Contact Information:** College of Liberal Arts and Sciences Associate Dean's office, Stevens Hall

Individuals expected to derive the greatest benefit from the CLAS pathway include continuing students who for a variety of reasons may be unable to complete their originally intended major, and readmitted or transfer students with numerous credits but no cohesive body of coursework in a major currently offered by the University of Maine. For some students, this CLAS pathway will be a temporary solution, enabling them to make progress towards a major before being admitted to that major. For other students, the BUS will serve as the route to graduation.

#### Admission:

All applicants to the Bachelor of University Studies (B.U.S.) program must be matriculated University of Maine students (whether continuing students or new admits) with a minimum of 42 credit hours earned here or through acceptable transfer from regionally accredited post-secondary institutions. The minimum cumulative grade point average for acceptance is 2.0. There is no provisional acceptance option for students with less than a 2.0 GPA or fewer than 42 credit hours.

To apply, students must meet with a BUS advisor in the College of Liberal Arts and Sciences and must submit a BUS degree plan with the advisor's approval. Final program admission decisions are made by the Dean of the College of Liberal Arts and Sciences (or designee). Students following the B.U.S pathway are CLAS students advised in the CLAS Advising Center. Upon completion of degree requirements, students will graduate with a BUS degree from the Division of Lifelong Learning.

#### Graduation Requirements:

Students must complete the following:

- 120 credit hours, including 30 credits at the 300 level or higher
- All University of Maine residency and General Education requirements, including a 3 credit senior capstone LAS 497. A grade of C- or better in the capstone is required
- 15 credits in each of three focus areas chosen from the options below. A 2.0 GPA across coursework included in the focus areas is required. Credits used to satisfy general education requirements may also be used to meet focus area requirements. Focus areas are: Business; Education; Engineering and Technology; Health and Wellness; Humanities; Mathematics, Statistics and Computing; Physical and Life Sciences; Natural Resources and the Environment; Performing and Visual Arts; Social Sciences

All students are subject to university-wide standards for good academic standing.

## Chemistry

## OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** Chemistry majors must earn a C or better.

**Other GPA requirements to graduate:** A minimum accumulative GPA of 2.0 ("C") in the major.

**Required Course(s) for fulfilling Capstone Experience:** CHY 498 and CHY 499

**Contact Information:** Barbara Cole, Professor and Chair, 154 Aubert Hall, 581-1169, cole@maine.edu

The chemistry curriculum, certified by the American Chemical Society, is designed to provide a strong foundation in organic, inorganic, physical, analytical and biological chemistry. Students build on this foundation with in-depth coursework in two or more of these areas. Hands-on work in the lab is an important aspect of a student's training to be a future chemist. In the laboratory, students learn techniques that will serve them well as they develop their ability to ask good scientific questions and explore possible solutions.

All chemistry majors at the University of Maine conduct independent research with a faculty member and then write a thesis about their project. UMaine is the only university in the state that offers graduate programs in chemistry. The presence of graduate students offers a unique and valuable experience for our undergraduate chemistry majors who work closely with the graduate students and faculty in research labs. Many of our majors have been co-authors on scientific presentations and publications.

The Department of Chemistry offers a number of scholarships to majors in chemistry, which are awarded on the basis of merit and academic standing (senior, junior, etc.). Students who are interested in a chemistry teaching career may apply for the ACS-Hach Scholarship.

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, pharmacy 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:

The requirements listed on this page are specific to this particular major. Students are also responsible for meeting any graduation requirements set out by their college. Students in the College of Liberal Arts and Sciences (CLAS) should make sure to review those requirements as stated on the College of Liberal Arts & Sciences page of the catalog.

## B.S. Degree in Chemistry

The Department of Chemistry offers two options for the BS degree in chemistry: The B.S. degree or the B.S. degree with ACS certification. Sample schedules and curricula for each degree option are available in the Department of Chemistry office and on the Chemistry web page.

## B.S. Degree

This degree option is excellent for students considering pre-medical, pre-veterinary, pharmacy, or double majors. The B.S. allows students 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. Students must take a minimum of 46 credits of course work in chemistry. The following courses are required for the non-certified B.S. degree:

- CHY 105 - Majoring in Chemistry Credits: 1
- CHY 121 - Introduction to Chemistry Credits: 3
- CHY 122 - The Molecular Basis of Chemical Change Credits: 3
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- CHY 124 - The Molecular Basis of Chemical Change Laboratory Credits: 1
- CHY 242 - Principles of Quantitative Analysis and Solution Equilibria Credits: 5
- CHY 251 - Organic Chemistry I Credits: 3
- CHY 252 - Organic Chemistry II Credits: 3
- CHY 253 - Organic Chemistry Laboratory I Credits: 2
- CHY 254 - Organic Chemistry Laboratory II Credits: 2
- CHY 298 - Introduction to Chemistry Research Credits: 1
- CHY 393 - Undergraduate Seminar in Chemistry Credits: 3
- CHY 431 - Structure and Mechanism in Biological Chemistry Credits: 3
- CHY 461 - Advanced Inorganic Chemistry I Credits: 3
- CHY 471 - Physical Chemistry I Credits: 3
- CHY 491 - Advanced Integrated Laboratory I Credits: 3
- CHY 498 - Undergraduate Research Credits: 1-2  
(must take a minimum of 3 credits total over at least 2 semesters)
- CHY 499 - Undergraduate Thesis Credits: 3
- Additional requirements include MAT 126, 127, 228, PHY 111/PHY 112 or PHY 121/PHY 122, 3 credits of speech communication (CMJ 102, 103 or 106); and one course in computer programming (COS 125, 211, 215, or 220) or Statistics (MAT 232). General education courses and electives must be chosen to satisfy the university-wide and college requirements for the BS degree. Work completed as part of the Honors program may be used to fulfill general education course requirements. HON 498 and HON 499 may be used in place of CHY 498 and CHY 499, respectively.

## B.S. with ACS certification

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 55 credits of course work in chemistry. The following courses are required for the ACS certified degree:

- CHY 105 - Majoring in Chemistry Credits: 1
- CHY 121 - Introduction to Chemistry Credits: 3
- CHY 122 - The Molecular Basis of Chemical Change Credits: 3
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1

- CHY 124 - The Molecular Basis of Chemical Change Laboratory Credits: 1
- CHY 242 - Principles of Quantitative Analysis and Solution Equilibria Credits: 5
- CHY 251 - Organic Chemistry I Credits: 3
- CHY 252 - Organic Chemistry II Credits: 3
- CHY 253 - Organic Chemistry Laboratory I Credits: 2
- CHY 254 - Organic Chemistry Laboratory II Credits: 2
- CHY 298 - Introduction to Chemistry Research Credits: 1
- CHY 393 - Undergraduate Seminar in Chemistry Credits: 3
- CHY 431 - Structure and Mechanism in Biological Chemistry Credits: 3
- CHY 461 - Advanced Inorganic Chemistry I Credits: 3
- CHY 471 - Physical Chemistry I Credits: 3
- CHY 475 - Physical Chemistry III Credits: 3
- CHY 491 - Advanced Integrated Laboratory I Credits: 3
- CHY 498 - Undergraduate Research Credits: 1-2  
(must take a minimum of 3 credits total over at least 2 semesters)
- CHY 499 - Undergraduate Thesis Credits: 3

Plus a choice of at least two of the following:

- CHY 423 - Introductory Polymer Chemistry Credits: 3
- CHY 443 - Instrumental Analysis Credits: 3
- CHY 450 - Introduction to Molecular Modeling Credits: 4
- CHY 453 - Intermediate Organic Chemistry Credits: 4
- CHY 462 - Organometallic Chemistry Credits: 3
- CHY 472 - Physical Chemistry II Credits: 3
- CHY 477 - Nanoscience Credits: 3
- CHY 483 - Introductory Wood Chemistry Credits: 3

### Additional Requirements:

Additional requirements include MAT 126, 127, 228, 258, PHY 111/PHY 112 or PHY 121/PHY 122, 3 credits of speech communication (CMJ 102, 103, or 106); and one course in computer programming (COS 125, 211, 215 or 220) or statistics (MAT 232). General education courses and electives must be chosen to satisfy the university-wide and college requirements for the BS degree. Students interested in pursuing a Math minor should take MAT 259 and 262 in lieu of MAT 258. Work completed as part of the Honors Program may be used to fulfill general education course requirements. HON 498 and HON 499 may be used in place of CHY 498 and CHY 499, respectively.

## B.A. 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 41 credits of course work in chemistry. The following courses are required for the BA degree:

- CHY 105 - Majoring in Chemistry Credits: 1

- CHY 121 - Introduction to Chemistry Credits: 3
- CHY 122 - The Molecular Basis of Chemical Change Credits: 3
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- CHY 124 - The Molecular Basis of Chemical Change Laboratory Credits: 1
- CHY 242 - Principles of Quantitative Analysis and Solution Equilibria Credits: 5
- CHY 251 - Organic Chemistry I Credits: 3
- CHY 253 - Organic Chemistry Laboratory I Credits: 2
- CHY 298 - Introduction to Chemistry Research Credits: 1
- CHY 393 - Undergraduate Seminar in Chemistry Credits: 3
- CHY 461 - Advanced Inorganic Chemistry I Credits: 3
- CHY 471 - Physical Chemistry I Credits: 3
- CHY 498 - Undergraduate Research Credits: 1-2  
(must take a minimum of 3 credits total over at least 2 semesters)
- CHY 499 - Undergraduate Thesis Credits: 3
- Two CHY Electives 400 level or above Credits: 6
- Additional requirements include MAT 126, 127, 228, PHY 111/PHY 112 or PHY 121/PHY 122, 3 credits of speech communication (CMJ 102, 103 or 106), and one course in computer programming (COS 125, 211, 215, or 220) or statistics (MAT 232). General education courses and electives must be chosen to satisfy the university-wide and college requirements for the BA degree including completion of a minor in another discipline.

Plus a choice of at least two of the following:

- CHY 443 - Instrumental Analysis Credits: 3
- CHY 450 - Introduction to Molecular Modeling Credits: 4
- CHY 453 - Intermediate Organic Chemistry Credits: 4
- CHY 462 - Organometallic Chemistry Credits: 3
- CHY 472 - Physical Chemistry II Credits: 3
- CHY 475 - Physical Chemistry III Credits: 3
- CHY 477 - Nanoscience Credits: 3
- CHY 483 - Introductory Wood Chemistry Credits: 3

## Pre-medicine and Pre-pharmacy

The chemistry curriculum is strong preparation for further study in medicine, pharmacy 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. Students may also complete the pre-medicine or pre-pharmacy concentration.

### Pre-medicine Concentration

The following courses are required for the pre-medicine concentration:

- All courses required for the B.S. degree in Chemistry
- BIO 100 - Basic Biology Credits: 4
- BIO 200 - Biology of Organisms Credits: 4



- BIO 377 - Medical Physiology Credits: 3
- BIO 378 - Medical Physiology Laboratory Credits: 2
- BMB 322 - Biochemistry Credits: 3
- BMB 323 - Biochemistry Laboratory Credits: 2
- PHI 235 - Biomedical Ethics Credits: 3
- PSY 100 - General Psychology Credits: 3
- SOC 101 - Introduction to Sociology Credits: 3

## Recommended Electives for the Pre-medicine Concentration

- BIO 208 - Anatomy and Physiology Credits: 4  
Or
- BIO 335 - Human Anatomy Credits: 4
- BMB 300 - General Microbiology Credits: 3
  
- BMB 305 - General Microbiology Laboratory Credits: 2
- ENG 212 - Persuasive and Analytical Writing Credits: 3
- INT 200 - (SBE) Orientation to Health Professions Credits: 4

## Pre-pharmacy Concentration

The following courses are required for the pre-pharmacy concentration:

- All courses required for the B.S. degree in Chemistry
- BIO 100 - Basic Biology Credits: 4
- BIO 200 - Biology of Organisms Credits: 4
  
- BIO 208 - Anatomy and Physiology Credits: 4  
Or
- BIO 335 - Human Anatomy Credits: 4
  
- BIO 377 - Medical Physiology Credits: 3
- BIO 378 - Medical Physiology Laboratory Credits: 2
- BMB 300 - General Microbiology Credits: 3
- BMB 305 - General Microbiology Laboratory Credits: 2
- BMB 322 - Biochemistry Credits: 3
- BMB 323 - Biochemistry Laboratory Credits: 2
- STS 232 - Principles of Statistical Inference Credits: 3
- PSY 100 - General Psychology Credits: 3

## Science Teaching Certification

There is dramatic need for well-qualified science teachers in both high schools and middle schools. The B.A. or non-certified B.S. 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, biomaterials, 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.-MS 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 online catalog.

# Communication

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0.

**Minimum Grade requirements for courses to count toward major:** A grade of C- or better is required for all other CMJ courses to fulfill a major requirement.

**Other GPA requirements to graduate:** A minimum cumulative GPA of 2.0 ("C") in the major.

**Required Course(s) for fulfilling Capstone Experience:** CMJ 485

**Contact Information:** Nathan Stormer, Chair, 430 Dunn Hall, 581-1938

The Department of Communication and Journalism offers three different B.A. degrees. These degrees are in: Communication, Journalism, and Mass Communication.

The B.A. in Communication studies how humans use 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 build connections between individuals, and within 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 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 shape society and how we live together? 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 (30) credits of specific CMJ courses and additional coursework external to the major.

The external coursework must include at least 9 credits in the areas of Writing and Language.

The 9 credits of coursework in the areas of Writing and Language must include at least 3 credits in each of the two areas (6 credits from one area; 3 credits from the other). The Writing area includes the following courses: ENG 205, ENG 206, ENG 212, ENG 301, ENG 317, ENG 415, ENG 416 and ENG 418. CMJ 236 and CMJ 237 can also be used to meet part of this requirement for Communication majors. The Language area includes: French, German, Spanish, American Sign Language or other non-English languages.

The requirements listed on this page are specific to this particular major. Students are also responsible for meeting any graduation requirements set out by their college. Students in the College of Liberal Arts and Sciences (CLAS) should make sure to review those requirements as stated on the College of Liberal Arts & Sciences page of the catalog.

## Requirements for Communication Majors

For students transferring equivalent courses from other colleges, 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.

### Core Course Requirements - 3 courses (9 credits)

- CMJ 201 - Communication Studies I Credits: 3
- CMJ 202 - Communication Studies II Credits: 3
- CMJ 485 - Capstone Seminar in Communication Credits: 3

### Major Course Requirements: 7 courses (21 credits)

Choose from the following list of CMJ courses. No more than 1 of CMJ 102/103/106/107; and at least 4 courses (12 credits) at 400 level or above.

No more than 1 of CMJ 102/103/106/107

- CMJ 102 - Fundamentals of Interpersonal Communication Credits: 3

- CMJ 103 - Fundamentals of Public Communication Credits: 3
- CMJ 106 - Storytelling Credits: 3
- CMJ 107 - Communication and the Environment Credits: 3
- CMJ 225 - Sex, Gender and Communication Credits: 3
- CMJ 257 - Business and Professional Communication Credits: 3
- CMJ 324 - Interpersonal Communication in Everyday Life Credits: 3
- CMJ 345 - Small Group Communication: Service-Learning Credits: 3
- CMJ 347 - Argument and Critical Thinking Credits: 3
- CMJ 360 - Nonverbal Communication Credits: 3
- CMJ 366 - Speech Play and Performance Credits: 3
- CMJ 367 - Public Relations Credits: 3
- CMJ 370 - Visual Communication Credits: 3
- CMJ 393 - Topics in Communication Credits: 3

At least 4 courses ( 12 credits) at 400 level or above

- CMJ 401 - Speech, Space, Event: Critical Applications Credits: 3
- CMJ 402 - Communication Research Credits: 3
- CMJ 403 - Persuasion and Social Influence Credits: 3
- CMJ 405 - Women and Communication Credits: 3
- CMJ 410 - Social Influence of Mass Communication Credits: 3
- CMJ 420 - Health Communication Credits: 3
- CMJ 425 - Health Campaigns: Service Learning Credits: 3
- CMJ 430 - Intercultural Communication Credits: 3
- CMJ 450 - Communication and Technology Credits: 3
- CMJ 466 - Narrative and Communication Credits: 3
- CMJ 470 - Communication in Organizations Credits: 3
- CMJ 475 - Sexualities in Mass Communication Credits: 3
- CMJ 493 - Advanced Topics in Communication Credits: 3

Additional credits:

Students MAY take additional credits in department courses beyond the 30 required for the major, but must take at least **72** credit hours outside of CMJ courses.

## Suggested curriculum for the B.A. in Communication

### First Year - First Semester

- CMJ 102 - Fundamentals of Interpersonal Communication Credits: 3  
or
- CMJ 103 - Fundamentals of Public Communication Credits: 3  
or
- CMJ 106 - Storytelling Credits: 3

- ENG 101 - College Composition Credits: 3
- General Education Human Values/Social Context Credits: 6
- General Education Science or Mathematics/Statistics Credits: 3

## First Year - Second Semester

- CMJ 201 - Communication Studies I Credits: 3
- General Education Human Values/Social Context Credits: 9
- General Education Science or Mathematics/Statistics Credits: 3

## Second Year - First Semester

- CMJ 202 - Communication Studies II Credits: 3
- General Education Science or Mathematics/Statistics Credits: 3
- CMJ External Requirement Credits: 9

## Second Year - Second Semester

- CMJ 2xx or 3xx Requirement Credits: 3
- CMJ External Requirement Credits: 3
- B.A. Upper Level Requirement Credits: 3
- \*\*Elective Credits: 6

## Third Year - First Semester

- CMJ 2xx or 3xx Requirement Credits: 3
- CMJ External Requirement Credits: 3
- General Education Ethics Credits: 3
- B.A. Upper Level Requirement Credits: 3
- \*\*Elective Credits: 3

## Third Year - Second Semester

- CMJ 4xx requirement Credits: 3
- General Education Science or Mathematics/Statistics Credits: 3
- CMJ External Requirement Credits: 3
- B.A. Upper Level Requirement Credits: 3
- \*\*Elective Credits: 3

## Fourth Year - First Semester

- CMJ 4xx Requirement Credits: 6
- CMJ External Requirement Credits: 9

## Fourth Year - Second Semester

- CMJ 485 - Capstone Seminar in Communication Credits: 3
- CMJ 4xx Requirement Credits: 3
- \*\*Electives Credits: 9

### \*\*Elective Credits

Elective Credits may be used to meet remaining General Education, college, B.A., or department requirements.

## Computer Science

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** Must obtain a grade of "C" or better in COS 125, COS 140, COS 225, MAT 126, ENG 101 and ENG 317.

**Other GPA requirements to graduate:** Required GPA in Major: 2.0

**Required Course(s) for fulfilling Capstone Experience:** COS 397 and COS 497

**Contact Information:** Silvia Nittel and Carol Roberts, Undergraduate Coordinators, School of Computing and Information Science, 348 Boardman Hall, nittel@spatial.maine.edu, Carol\_Roberts@umit.maine.edu

Computer science is the foundation of computing and information technology. Computer scientists study the theory, design, implementation, and performance of computers and computer software, including the study of computability and computation itself. Computer scientists bring their breadth and depth of knowledge to bear to efficiently solve computing problems. They design and implement software systems. They devise new uses for computers, both to solve new problems and to provide novel, innovative capabilities and services.

Core areas of computer science include databases, high-performance computing, artificial intelligence, computer networks, computer graphics, software engineering, operating systems, programming languages, cybersecurity and computer organization and architecture. Computer science intersects other sciences to form such fields as computational biology and bioinformatics, medical informatics, computational chemistry, cognitive science, robotics, and computational linguistics. Knowledge of computer science, beyond simply what is needed to implement and use information systems, is increasingly important in medicine, business, law, and science, as well as being important for making informed decisions about technology.

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, software engineering, algorithms and data structures, computer architecture, and the theory of computer science. Electives allow students to study additional topics such as database, high performance computing, networks, artificial intelligence and cybersecurity. A capstone experience allows students to use their accumulated knowledge of the field either through field experience, independent study, or as an undergraduate researcher in one of our laboratories.

Minimum hours needed for graduation: 120 degree hours. Required GPA: 2.00. Required Major GPA: 2.00. All students must satisfy the general education requirements of both the College of Liberal Arts and Sciences and University. A University of Maine student who wishes to take a course elsewhere for the degree must have the course approved in advance by the department and the college.

The Bachelor of Science (B.S.) degree is our traditional computer science undergraduate degree. It prepares students to work in the computer industry or to study computer science in graduate school. The B. S. degree is also appropriate for students who wish to contribute a strong computer science background to an interdisciplinary team, such as one in bioinformatics. The B.S. degree is accredited by the Computer Science Accreditation Commission (CSAC) of the Computing Sciences Accreditation Board (CSAB), a specialized accrediting body recognized by the Commission on Recognition of Postsecondary Accreditation (CORPA).

The Bachelor of Arts (B.A.) degree gives the student a strong foundation in computer science while providing more flexibility in coursework outside the major. It also prepares the student for a rewarding career in computing or for graduate work.

The requirements listed on this page are specific to this particular major. Students are also responsible for meeting any graduation requirements set out by their college. Students in the College of Liberal Arts and Sciences (CLAS) should make sure to review those requirements as stated on the College of Liberal Arts & Sciences page of the catalog.

## Bachelor of Science Degree in Computer Science

All students must satisfy the University requirements for graduation. All required courses by the School of Computing and Information Science must be taken for a grade; courses taken PASS/FAIL will not count.

### Computer Science Courses - 50 hours

- COS 125 - Introduction to Problem Solving Using Computer Programming Credits: 3  
See Footnote 1
- COS 140 - Foundations of Computer Science Credits: 3  
See Footnote 1
- COS 225 - Object-Oriented Design, Programming and Data Structures Credits: 4  
See Footnote 1
- COS 226 - Introduction to Data Structures Credits: 3
- COS 250 - Discrete Structures Credits: 3
- COS 301 - Programming Languages Credits: 3
- COS 235 - Computer Architecture Credits: 4
- COS 350 - Data Structures and Algorithms Credits: 3
- COS 397 - Computer Science Capstone 1 Credits: 3
- COS 420 - Introduction to Software Engineering Credits: 3
- COS 331 - Operating Systems Credits: 3
- COS 451 - Automata, Computability, and Languages Credits: 3
- COS 490 - Computers, Ethics and Society Credits: 3
- COS 497 - Computer Science Capstone 2 Credits: 3
- Two additional courses from COS 3XX, COS 4XX and COS 5XX

### Mathematics Courses - 14 hours

- MAT 126 - Calculus I Credits: 4  
See Footnote 1

- MAT 127 - Calculus II Credits: 4
- MAT 228 - Calculus III Credits: 4  
Or
- MAT 258 - Introduction to Differential Equations with Linear Algebra Credits: 4  
Or
- MAT 259 - Differential Equations Credits: 3  
Or
- MAT 261 - Introduction to Abstract Mathematics Credits: 3  
Or
- MAT 262 - Linear Algebra Credits: 3
- STS 215 - Introduction to Statistics for Business and Economics Credits: 3  
**or**
- STS 232 - Principles of Statistical Inference Credits: 3  
**or**
- STS 332 - Statistics for Engineers Credits: 3  
**or**
- STS 434 - Introduction to Statistics Credits: 4

## Science Requirement - 14 hours

Students must take a minimum of 14 credit hours of science. This must include a two-semester sequence of a laboratory science (e.g., PHY 121 and PHY 122), for a total of 8 hours, and an additional 6 hours of science courses. Courses fulfilling this requirement may be from any of the following areas:

- Astronomy (AST; except AST 114)
- Biological Sciences (BIO)
- Biochemistry, Microbiology, and Molecular Biology (BMB; BMB 207 and above)
- Chemistry (CHY; CHY 121 and above)
- Earth Sciences (ERS)
- Forest Ecosystem Science (FES)
- Marine Science (SMS)
- Physics (PHY; PHY 121 and above)
- Wildlife Ecology (WLE; WLE 200 and above)

## Footnote 1

A student must complete these courses with a grade of "C" or better in each; a grade of "C-" is not sufficient.

## Bachelor of Arts Degree in Computer Science

### Computer Science Courses - 47 hours

- COS 125 - Introduction to Problem Solving Using Computer Programming Credits: 3



- See Footnote 1
- COS 140 - Foundations of Computer Science Credits: 3  
See Footnote 1
- COS 225 - Object-Oriented Design, Programming and Data Structures Credits: 4  
See Footnote 1
- COS 226 - Introduction to Data Structures Credits: 3
- COS 250 - Discrete Structures Credits: 3
- COS 301 - Programming Languages Credits: 3
- COS 235 - Computer Architecture Credits: 4
- COS 350 - Data Structures and Algorithms Credits: 3
- COS 397 - Computer Science Capstone 1 Credits: 3
- COS 420 - Introduction to Software Engineering Credits: 3
- COS 331 - Operating Systems Credits: 3
- COS 451 - Automata, Computability, and Languages Credits: 3
- COS 490 - Computers, Ethics and Society Credits: 3
- COS 497 - Computer Science Capstone 2 Credits: 3
- One additional course from COS 398, COS 4XX and COS 5XX

## Other Required Courses

- ENG 101 - College Composition Credits: 3  
See Footnote 1
- ENG 317 - Business and Technical Writing Credits: 3  
See Footnote 1
- MAT 126 - Calculus I Credits: 4  
See Footnote 1
- MAT 127 - Calculus II Credits: 4
  
- MAT 228 - Calculus III Credits: 4  
Or
- MAT 258 - Introduction to Differential Equations with Linear Algebra Credits: 4  
Or
- MAT 259 - Differential Equations Credits: 3  
Or
- MAT 261 - Introduction to Abstract Mathematics Credits: 3  
Or
- MAT 262 - Linear Algebra Credits: 3
  
- STS 215 - Introduction to Statistics for Business and Economics Credits: 3  
**or**
- STS 232 - Principles of Statistical Inference Credits: 3  
**or**
- STS 332 - Statistics for Engineers Credits: 3  
**or**
- STS 434 - Introduction to Statistics Credits: 4

## B.A. Distribution Requirement

All students pursuing the Bachelor of Arts (B.A.) in the College of Liberal Arts and Sciences must complete a second major or a minor outside the major.

### Footnote 1

A student must complete these courses with a grade of "C" or better in each; a grade of "C-" is not sufficient.

## Undergraduate Research Opportunities

The School of Computing and Information Science has several research laboratories focusing on such areas as artificial intelligence and software agents, database systems, high-performance computing, cybersecurity, and computer modeling of physical processes. Most of these laboratories routinely include undergraduates who assist the professors and the graduate students in their research. Students are mentored by the professors and graduate students, and they get a good idea of what research and graduate school is like. In addition to the interesting and valuable experience gained, the students are often paid and/or co-author research papers.

## Career Opportunities

Computer Science graduates are well-positioned to secure rewarding, high-paying jobs in the computer industry that are relatively immune to outsourcing. In addition, graduates can also apply their knowledge wherever computers are used, including businesses, research institutions, educational institutions, and government laboratories and agencies. The B.S. and B.A. degrees both provide a rigorous emphasis on computer science along with a strong liberal arts education. Consequently, students are well prepared to enter any career that requires a liberal arts degree. Graduates of the School of Computing and Information Science are also well prepared to enter graduate school for further study in computer science or other related fields or, with some additional preparation, to enter a professional school.

## Graduate Work

The School offers the Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) in Computer Science, the Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) in Spatial Information Science and Engineering, the Master of Science in Spatial Informatics, and the Master of Science (M.S.) in Information Systems. Please see the graduate catalog School's Web page for more information.

## English

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** A "C-" or better in all courses counted toward the English Major.

**Other GPA requirements to graduate:** A minimum accumulative GPA of 2.0 ("C") in the major.

**Required Course(s) for fulfilling Capstone Experience:** ENG 490 or ENG 496 or ENG 499

**Contact Information:** Laura Cowan, Department Chair, 304 Neville Hall, (207) 581-3823, [laura.cowan@umit.maine.edu](mailto:laura.cowan@umit.maine.edu)

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. The English degree 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**

Courses in literature make up the largest portion of the English major's studies. Our curriculum provides 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 and postmodern poetry, and to the New Writing Series, which brings as many as 20 exciting writers to campus each year.

#### **Writing Concentrations**

In addition to at least 24-27 credits in literature and literary theory, every English major completes a 9-12 credit concentration in Creative Writing, Analytical Writing or Technical/Professional Writing. Each concentration provides both introductory and advanced instruction and prepares students for further education or for work in many professions.

The requirements listed on this page are specific to this particular major. Students are also responsible for meeting any graduation requirements set out by their college. Students in the College of Liberal Arts and Sciences (CLAS) should make sure to review those requirements as stated on the College of Liberal Arts & Sciences page of the catalog.

## **Core Requirements for All Majors:**

Majors take a minimum of 36 credits in English beyond ENG 101. At least 18 of these credits must be University of Maine courses. By the time of graduation, a student must also complete an additional field requirement, which may be satisfied in three ways: a minor, a second major, or intermediate proficiency in a language other than English (to the 204 level in college courses, or the equivalent by examination).

All majors must complete the following specific requirements:

- ENG 170 - Foundations of Literary Analysis Credits: 3
- ENG 222 - Reading Poems Credits: 3
- ENG 271 - The Act of Interpretation Credits: 3
- Five literature courses at the 300 or 400 level including at least one British and one before 1800 Credits: 15
- One additional English course at the 200 level or higher Credits: 3
- Three or four courses in the chosen writing concentration Credits: 9-12

## **Writing Concentration Options**

Each writing concentration requires a sequence of courses beginning at the 200 or 300 level and culminating in advanced coursework or pre-professional experiences in the senior year.

## Creative Writing (9 credits):

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 Credits: 3  
or
- ENG 206 - Descriptive and Narrative Writing Credits: 3
- ENG 307 - Writing Fiction Credits: 3  
or
- ENG 308 - Writing Poetry Credits: 3  
or
- ENG 309 - Writing Creative Nonfiction Credits: 3
- ENG 405 - Topics in Creative Writing Credits: 3  
or
- ENG 407 - Advanced Fiction Writing Credits: 3  
or
- ENG 408 - Advanced Poetry Writing Credits: 3

The Capstone Experience for this sequence is completed by the submission and approval of a creative manuscript, usually supervised by the instructor of the 400-level writing workshop. Students register for ENG 499, a non-credit Capstone designator, in the semester they plan to complete their Capstone.

## Analytical Writing (9 credits):

This concentration is for students whose primary interest is in literature, literary theory, and in writing essays, literary criticism, and academic papers. It provides excellent preparation for law school or for graduate study in language and literature. It is also useful for students planning to teach at the secondary or college level. Course work includes:

- ENG 212 - Persuasive and Analytical Writing Credits: 3  
or
- ENG 315 - Research Writing in the Disciplines Credits: 3  
Two of the following:
- ENG 301 - Advanced Composition Credits: 3
- ENG 395 - English Internship Credits: 3
- ENG 402 - Topics in Writing and Research Credits: 3

The Capstone Experience for this sequence is completed by tutoring for a semester in the Writing Center after the completion of ENG 395, by completing ENG 402, or by completing a thesis-level research paper in a 400-level literature course. Students register for ENG 499, a non-credit Capstone designator, in the semester they plan to complete their Capstone.

## Technical/Professional Writing (12 credits):

This 12-credit 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 Credits: 3  
Two of the following:
- ENG 415 - Advanced Report & Proposal Writing Credits: 3

- ENG 416 - Technical Editing & Document Design Credits: 3
- ENG 418 - Topics in Professional Writing Credits: 3  
and
- ENG 496 - Field Experience in Professional Writing Credits: 1-6  
Students register for ENG 499, a non-credit Capstone designator, in the semester they plan to complete their Field Experience.

## Senior Capstone Requirement:

The senior capstone requirement applies to all majors and 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 Credits: 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 402 - Topics in Writing and Research Credits: 3
- ENG 405 - Topics in Creative Writing Credits: 3
- ENG 407 - Advanced Fiction Writing Credits: 3
- ENG 408 - Advanced Poetry Writing Credits: 3
- ENG 496 - Field Experience in Professional Writing Credits: 1-6  
(at least 3 hrs.)  
Approval of an Honors thesis with a topic in an area of English studies  
Note: Students register for ENG 499 (zero credit, zero tuition) during the semester they will complete their capstone work. ENG 499 is open by permission only; contact the department to complete paperwork.

## Suggested curriculum for the B.A. in English

### First Year - First Semester

- ENG 101 - College Composition Credits: 3  
or
- ENG 129 - Topics in English Credits: 3 (not online)  
or
- ENG 170 - Foundations of Literary Analysis Credits: 3

### First Year - Second Semester

- ENG 101 - College Composition Credits: 3  
or
- ENG 129 - Topics in English Credits: 3 (not online)  
or
- ENG 170 - Foundations of Literary Analysis Credits: 3
- ENG 205 - An Introduction to Creative Writing Credits: 3

- Credits toward Additional Field Requirement (second language, minor or second major) General Education Credits: 8-9

## Second Year - First Semester

- ENG 205 - An Introduction to Creative Writing Credits: 3  
or
- ENG 206 - Descriptive and Narrative Writing Credits: 3  
or
- ENG 212 - Persuasive and Analytical Writing Credits: 3  
or
- ENG 222 - Reading Poems Credits: 3
- Credits toward Additional Field Requirement, BA Requirement, General Education Requirements and electives Credits: 4-6

## Second Year - Second Semester

- ENG 205 - An Introduction to Creative Writing Credits: 3  
or
- ENG 206 - Descriptive and Narrative Writing Credits: 3  
or
- ENG 212 - Persuasive and Analytical Writing Credits: 3  
or
- ENG 317 - Business and Technical Writing Credits: 3
- ENG 271 - The Act of Interpretation Credits: 3
- ENG 200 or 400-level Credits: 3
- 200-level language if needed or credits chosen from remaining General Education and BA requirements and free electives Credits: 3-4

## Third Year - First Semester

- ENG 315 - Research Writing in the Disciplines Credits: 3
- ENG 300 or 400-level writing course in concentration. Credits: 3
- ENG 300 level literature courses. Credits: 3-6
- General Education and B.A. Requirements. Credits: 6-9

## Third Year - Second Semester

- ENG 300 or 400 level writing course. Credits: 3
- ENG 300 level literature course. Credits: 3-6
- Electives, other program requirements remaining. Credits: 3-6

## Fourth Year - First Semester

- ENG 400-level literature and writing courses including capstone options Credits: 3-12
- Electives. Credits: 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. Credits: 15

**Note:** A minimum of 72 credits must be completed outside of the major.

# French

## OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 120 (30 within major)

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** None.

**Other GPA requirements to graduate:** A minimum accumulative GPA of 2.0 ("C") in the major.

**Required Course(s) for fulfilling Capstone Experience:** FRE 495

**Contact Information:** Jane Smith, Chair of MLC, 201 Little Hall, (207) 581-2075, jsmith@maine.edu

### 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.

The requirements listed on this page are specific to this particular major. Students are also responsible for meeting any graduation requirements set out by their college. Students in the College of Liberal Arts and Sciences (CLAS) should make sure to review those requirements as stated on the College of Liberal Arts & Sciences page of the catalog.

## Special Requirements:

- FRE 495 - Senior Project in French Credits: 0-3  
(This satisfies a General Education requirement)
- INT 410 - (ANT, ENG, MLC) Introduction to the Study of Linguistics Credits: 3

9 credit hours above intermediate level that must include:

- FRE 305 - French Conversation and Composition I Credits: 3  
or
- FRE 306 - French Conversation and Composition II Credits: 3
- FRE 309 - Readings in French Literature Credits: 3  
or
- FRE 310 - Readings in Francophone Literature Credits: 3
- FRE 320 - French Pronunciation Credits: 3

### French (May Term)

- FRE 397 - French (May Term) Credits: 3  
In Québec: odd-numbered years  
or
- FRE 398 - French Immersion: Western France Credits: 3  
even-numbered years  
(Waived for a full-year or semester abroad experience.)

At least 18 hours of 400-level French courses, which must include:

- FRE 400 - Advanced French Grammar Credits: 3
- Two courses in literature

### French, French-Canadian, or Franco-American Civilization

- Credits: 3

### Strongly Recommended:

- History of a Francophone Country. Credits: 3
- Full-year or semester-abroad program

## German

**Please note:** This major is currently suspended for potential elimination and is not accepting new students. Students currently in this major should refer to the catalog in effect when they entered the program.

**Contact Information:** Jane Smith, Chair of Modern Languages and Classics, 201 Little Hall, 581-2075,  
jane.smith@umit.maine.edu



The requirements listed on this page are specific to this particular major. Students are also responsible for meeting any graduation requirements set out by their college. Students in the College of Liberal Arts and Sciences (CLAS) should make sure to review those requirements as stated on the College of Liberal Arts & Sciences page of the catalog.

## History

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** A "C" or better is required in all History (HTY) courses.

**Other GPA requirements to graduate:** A minimum accumulative GPA of 2.0 ("C") in the major.

**Required Course(s) for fulfilling Capstone Experience:** HTY 498

**Department Residency Requirement:** At least 18 credits must be earned from the History Department at the University of Maine

**Contact Information:** Richard Judd , Chair, Department of History, 255 Stevens Hall, 581-1923 or Suzanne Moulton, Administrative Assistant, Department of History, 255 Stevens, 581-1908

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 labor history. History graduates 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 and universities. More recently, increasing numbers of history graduates are finding their way into private and public non-profit organizations and 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 and broadcasting, and 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. Only one Canadian course may count.
- 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:

A. Complete, through course work and/or CLEP exam, the equivalent of three years of a foreign language. If this option is chosen, it will fulfill both the History major requirement for an outside field of study and the CLAS requirement for completion of a minor or a second major.

B. Complete a recognized minor, a second major, or an approved Interdisciplinary Curriculum at UMaine that requires at least four non-History courses beyond the survey level.

All students must earn at least a "C" in all courses applied to the major. University requirements place a limit of forty-eight (48) hours of degree credit **within the major** to be counted toward the Bachelor of Arts degree. Thus a **maximum of sixteen (16)** history courses may be applied toward the 120 total credits required for graduation, with at least 72 credits taken outside the major department. History majors should be careful to limit the number of courses taken below the 300-level; the minimum of eight upper-level courses required for the major leaves a maximum of eight 100-level and 200-level courses to be counted toward graduation.

The requirements listed on this page are specific to this particular major. Students are also responsible for meeting any graduation requirements set out by their college. Students in the College of Liberal Arts and Sciences (CLAS) should make sure to review those requirements as stated on the College of Liberal Arts & Sciences page of the catalog.

## Required Courses in Suggested Sequence for the B.A. in History

### First Year - First Semester

- ENG 101 - College Composition Credits: 3

### First Year - Second Semester

- HTY 1XX Introductory Elective Credits: 3
- Second semester language Credits: 3
- Electives/General Education Requirements Credits: 9

### Second Year - First Semester

- HTY 1XX or 2XX Introductory Elective Credits: 3
- HTY 3XX or 4XX Advanced Elective Credits: 3
- Third semester language Credits: 3
- Electives/General Education Requirements Credits: 6

### Second Year - Second Semester

- HTY 1XX or 2XX Introductory Elective Credits: 3
- HTY 3XX or 4XX Advanced Elective Credits: 3
- Fourth semester language Credits: 3
- Electives/General Education Requirements Credits: 6

### Third Year - First Semester

- HTY 3XX or 4XX Advanced Elective Credits: 6
- Electives/General Education Requirements Credits: 9

### Third Year - Second Semester

- HTY 3XX or 4XX Advanced Elective Credits: 6
- Electives/General Education Requirements Credits: 9

### Fourth Year - First Semester

- HTY 3XX or 4XX Advanced Elective Credits: 3
- ElectivesCredits: 12

### Fourth Year - Second Semester

- HTY 498 - Senior Seminar in History Credits: 3
- Electives Credits: 12

## Human Dimensions of Climate Change

# OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** ANT 101, 102, 225, & 410 must be completed with minimum grade of C- or better. Capstone experience (ANT 493 or 497) must be completed with a minimum grade of C or better. Other GPA requirements to graduate: A minimum accumulative GPA of 2.0 in the major.

**Required Courses for fulfilling Capstone Experience:** ANT 493 or 497

**Contact Information:** Gregory Zaro, Chair of Anthropology, Associate Professor of Anthropology and Climate Change, 5773 S. Stevens Hall, Room 242 (207) 581-1857, Fax: (207) 581-1823, gregory.zaro@umit.maine.edu

Climate Change is one of the leading environmental and human problems facing the world today. Melting glaciers and rising oceans with landward-moving shorelines are one side of the issue, and shifting temperature and moisture patterns and the responses of earth's biota to these changes add to the dilemma. The other side of the problem is the human dimension, both with regards to impact and response. Humans contribute to global warming and environmental degradation, and humans alone can provide solutions to these problems through successful policy initiatives at local through global scales. Solutions to the many problems arising from climate change will only be found with an understanding of the processes that govern both climate and human culture. Successful policy decisions to mitigate climate change will be based on solid science and social science related to culture. Social scientists have an extremely important role to play in assisting state, national, and world decision makers in

understanding environmental problems and finding solutions to them. Social scientists work with policy makers, conduct research among local populations around the world, and on the basis of this work devise policies that take into account the social and cultural implications of policy decisions from local to international scales.

With core faculty situated in the Anthropology Department, this degree program addresses these important dimensions of climate change. Anthropologists draw their data from all known human societies. Social anthropologists conduct extended periods of fieldwork in communities around the world; physical anthropologists and archaeologists reconstruct those of the past. As a result of this work, anthropologists have built up robust models and explanations of similarity and variance across cultures. They are unusually well equipped to investigate and understand responses to climate change by people whose cultural backgrounds may be radically different from those of the western world. They have a detailed knowledge of how environment and climate shapes cultures, and of how cultures shape their environments. They are also able to devise policies that take cultural differences into account in devising and managing climatic solutions.

### **Special Resources and Programs**

Core faculty members of this program are affiliated with the Anthropology Department and engage in research focused on the human dimensions of environmental issues. Some are also members of the Climate Change Institute or work on climate change research. These faculty are directly involved in teaching the program's courses, advising students, participating in research projects, and providing guest lectures as needed.

### **Departmental Notes:**

#### **Related Graduate Programs**

The Department of Anthropology cooperates with the Climate Change Institute to train graduate students in prehistoric archeology towards an MS degree in Quaternary and Climate Studies. Application is made through the Graduate School.

The PhD program in Anthropology and Environmental Policy centers on understanding human society and culture in cross-cultural perspective and their pivotal role in implementing successful environmental policy. The program engages students in a multi-disciplinary framework bridging environmental sciences and policy while focusing on the sociocultural impacts of, and responses to, local and global environmental change. Application is made through the Graduate School.

#### **Student Outcomes and Career Opportunities**

The program engages students in the human dimension issues of one of the most important scientific and cultural challenges facing the world today. These engaged students are able to understand the diverse human causes and impacts of climate change to better enact successful policy decisions at local, national, and international levels. The program provides students with skills useful outside as well as within the academic environment. Specific skill sets are both quantitative and qualitative and focus on ethnographic methods and analysis such as participant observation, directed interviewing, and statistical analysis of qualitative and quantitative ethnographic data. Graduates of this program will seek positions in private business as well as in state, national, and international institutions that deal with policy decisions related to the human dimensions of climate management and change.

#### **The Bachelor of Arts in Human Dimensions of Climate Change (HDCC)**

Students may declare an HDCC major in their first year, and must declare their major once they have accumulated 53 credits. It is desirable to begin taking HDCC courses in the first semester at the university.

First year students are advised to take ANT 101 (fall semester) and ANT 102 (spring semester), as these are both required for the major and are prerequisites for many upper division courses. First year students also concentrate on completing General Education requirements.

ANT 225 and 410 are both major requirements. ANT 225 should be completed early in the degree program, whereas ANT 410 is an advanced seminar and will be restricted to the junior or senior year. The capstone experience can be completed with either ANT 493 (capstone course) or ANT 497 (independent research), taken in the junior or senior year.

The requirements listed on this page are specific to this particular major. Students are also responsible for meeting any graduation requirements set out by their college. Students in the College of Liberal Arts and Sciences (CLAS) should make sure to review those requirements as stated on the College of Liberal Arts & Sciences page of the catalog.

## Required Courses

A minimum of 45 credits is required. ANT 101, 102, 225, and 410 must be completed with a minimum grade of C- or better. ANT 493 (or ANT 497) must be completed with a minimum grade of C or better.

## Core Courses

Required core courses with minimum grade of C-

- ANT 101 - Introduction to Anthropology: Human Origins and Prehistory Credits: 3
- ANT 102 - Introduction to Anthropology: Diversity of Cultures Credits: 3
- ANT 225 - Climate Change, Societies and Cultures Credits: 3
- ANT 4XX Human Dimensions of Climate Change Senior Seminar Credits: 3
- ANT 493 - Capstone in Anthropology: What does it mean to be human? Credits: 3

Electives (12 credits - a minimum of 9 credits must come from Anthropology):

- ANT 212 - The Anthropology of Food Credits: 3
- ANT 235 - Cultural Perceptions of Nature Credits: 3
- ANT 250 - Conservation Anthropology: The Socio-Cultural Dimension of Environmental Issues Credits: 3
- ANT 270 - Environmental Justice Movements in the United States Credits: 3
- ANT 295 - American Indians and Climate Change Credits: 3
- **or**
- NAS 295 - American Indians and Climate Change Credits: 3
- ANT 311 - Geography of Climate Change Credits: 3
- **or**
- GEO 311 - Geography of Climate Change Credits: 3
- ANT 420 - Human Impacts on Ancient Environments Credits: 3
- ANT 464 - Ecological Anthropology Credits: 3
- ANT 466 - Economic Anthropology Credits: 3
- ANT 475 - Environmental Archaeology Credits: 3
- ANT 480 - Andean Prehistory Credits: 3
- ECO 381 - Sustainable Development Principles and Policy Credits: 3
- HTY 479 - U.S. Environmental History Credits: 3
- PHI 232 - Environmental Ethics Credits: 3

## Physical Science Courses

Required Physical Science Courses

- BIO 100 - Basic Biology Credits: 4
- CHY 121 - Introduction to Chemistry Credits: 3

- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- PHY 111 - General Physics I Credits: 4

Choose Earth Science (Option A) or Marine Science (Option B) Track

## OPTION A, EARTH SCIENCE TRACK

Required Courses

- ERS 121 - Humans and Global Change Credits: 3

plus one of the following

- ERS 240 - The Atmosphere Credits: 4
- ERS 369 - Energy Resources and Climate Change Credits: 3

## OPTION B, MARINE SCIENCE TRACK

Required Courses

- SMS 100 - Introduction to Ocean Science Credits: 3
- SMS 402 - Oceans and Climate Change Credits: 3

## Capstone Experience

Choose one of the following courses, with minimum grade of C

- ANT 493 - Capstone in Anthropology: What does it mean to be human? Credits: 3
- ANT 497 - Department Projects Credits: Ar

## Notes:

- ANT 225, 410, the capstone experience, and 15 other degree program credits must be taken at UMaine.
- Students writing an honors thesis related to the human dimensions of climate change do not have to take the capstone course, ANT 493 or ANT 497 Independent Study
- Students choosing the Earth Science Track will need to have completed ERS 121 or any other 100-level ERS course before they enter ERS 369.
- Students choosing the Marine Science Track will need to have completed two of the three required physical science courses along with SMS 100 before they enter SMS 402.
- Advanced study in the human dimension of climate change often requires use of quantitative methods, foreign language competency, and some theoretical sophistication. Consequently, students planning to pursue graduate work in a related field of study should take a course in statistics, such as ANT 462 (Numerical Methods in Anthropology), and achieve relevant foreign language competency at the intermediate level.

- Minors in the social or environmental sciences are appropriate for this major. These are included under the College of Liberal Arts and Sciences.

## Interdisciplinary Studies

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 120

**Minimum Grade requirements for courses to count toward major:** None.

**GPA requirements to graduate:** 2.0

**Contact Information:** Tim Cole, Assoc. Dean, College of Liberal Arts and Sciences, 5774 Stevens Hall, Room 130, Orono, ME 04469-5774, (207) 581-3844, timothy.cole@umit.maine.edu

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, two of whom must come from 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 departments (at least two of which must be in CLAS); with 24 credits from departments in the College of Liberal Arts and Sciences. At least 27 of these credits must be in upper-level courses (with prerequisites), 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.

The Bachelor of Arts in Interdisciplinary Studies in the College of Liberal Arts and Sciences (CLAS) serves highly motivated students with specific academic goals that can be achieved more effectively by combining disciplines than by pursuing a major through the conventional departmental structure. The student designs his or her own curriculum with the guidance of a faculty committee from the disciplines representing the student's areas of interest. At least two-thirds of the credits and the committee members must be from CLAS. After the student's committee has approved the proposal, it is reviewed by the College Interdisciplinary Studies Committee which may approve, reject or return the proposal for revisions. The student may declare Interdisciplinary Studies as a major only after the proposal has been approved at the College level.

Sample interdisciplinary programs include Religious Studies, Film Studies, Black Studies, Franco-American Studies, and Native American Studies. Students are responsible for recruiting and convening their own faculty committees and working with them to develop an approved curriculum. Normally at least three or four semesters at the University of Maine are needed to plan and complete these individualized programs of study, and it is recommended that students begin the process at the end of the sophomore year. This program is not suitable for advanced transfer students.

#### REQUIREMENTS:

1. No more than 75 earned credit hours (including those transferred) by the student before the major is declared. Program proposals submitted after 75 credit hours have been earned will be considered only in extraordinary circumstances
2. Minimum grade point average of 2.75
3. Strong commitment to clear educational goals. Ability to work independently and to engage faculty members

The requirements listed on this page are specific to this particular major. Students are also responsible for meeting any graduation requirements set out by their college. Students in the College of Liberal Arts and Sciences (CLAS) should make sure to review those requirements as stated on the College of Liberal Arts & Sciences page of the catalog.

## International Affairs

## OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** A "C" or better is required in all International Affairs courses counting towards the major, regardless of concentration.

**Other GPA requirements to graduate:** None.

**Contact Information:** Micheal Lang, Associate Professor of History, 315 Stevens Hall, (207) 581-1964, lang@maine.edu

A degree in International Affairs benefits students as they prepare for their roles as national and global citizens, teaching them the dynamics behind a changing global society and introducing them to ways of enhancing international community. Moreover, the International Affairs Program offers a strong, interdisciplinary curriculum that includes courses from departments across the campus and enables students from diverse disciplines to integrate an international perspective into their studies and future careers.

The Bachelor of Arts degree in International Affairs allows students to choose among several thematic concentrations or an area studies concentration (Canadian Studies). During the first two years, students are encouraged to complete course work to fulfill the general education requirements of the Bachelor of Arts degree and the International Affairs core curriculum. All International Affairs students are strongly encouraged to develop or sharpen their language training early in their program of study in order to fulfill the language requirement in their third or fourth year. The final two years should be focused on the concentration electives. All International Affairs students are strongly encouraged to participate in the Study Abroad Program.

Course overlap: Students may only "double count" two courses (6 credits) to fulfill both IA and program requirements for a second major.

Institutional credit requirement: Institutional credit is defined as all University of Maine (Orono) courses regardless of delivery method (live, on-line, etc.). For the IA major, 18 credits must be completed at the University of Maine as follows: 15 credits in the student's concentration, along with the capstone requirement. For the IA minor, 9 credits exclusive of the Foreign Language requirement must be completed at the University of Maine.

Core Requirements - 15 hours.

The requirements listed on this page are specific to this particular major. Students are also responsible for meeting any graduation requirements set out by their college. Students in the College of Liberal Arts and Sciences (CLAS) should make sure to review those requirements as stated on the College of Liberal Arts & Sciences page of the catalog.

## Core Requirements - 15 credit hours

Students must earn a "C" or better in all courses required in the major.

- ANT 102 - Introduction to Anthropology: Diversity of Cultures Credits: 3
- ECO 121 - Principles of Macroeconomics Credits: 3
- HTY 241 - History of Globalization, 1900-Present Credits: 3
- INA 101 - Introduction to International Affairs Credits: 3
- POS 120 - Introduction to World Politics Credits: 3



## Capstone Requirement (3 credits)

IA majors may complete their capstone requirement in one of the following ways:

- A capstone course whose topic falls within their thematic concentration. For thematic concentrations with POS as the primary field, POS 499 may fulfill the capstone. For thematic concentrations with HTY as the primary field, HTY 498 may fulfill the capstone. For thematic concentrations with ANT as the primary field, ANT 493 may fulfill the capstone requirement. For thematic concentrations with ECO as the primary field, ECO 489 may fulfill the capstone requirement. For the concentration with MCL as the primary field, FRE 495 or SPA 495 may fulfill the capstone requirement. For Global Women's, Gender, and Sexuality Issues concentration, WGS 480 may fulfill the capstone. See immediately below for the Canadian Studies capstone. **Note:** International Affairs majors with a second major may fulfill the requirement with the capstone in that major if it has sufficient content from the thematic concentration's primary field. Students with questions in this area must consult with their academic adviser and the IA Director before they enroll for the course
- In conjunction with an existing course in the student's concentration, students may propose to conduct in-depth research and analysis with the faculty member teaching the course. Students must have written approval of the course instructor and the IA Director. **Note:** Students in the Canadian Studies concentration will meet their capstone requirement via this process through CAN 401. Any student of whatever concentration choosing this option must have senior standing and have declared the concentration in question. Completion of the requirements of the existing course, standing alone, will not fulfill the capstone requirement.
- A directed research project on an approved topic proposed by the student. The project must meet the spirit and intent of the General Education capstone experience. **NOTE:** Students must have confirmation of a faculty member who will advise the project before they can register for an independent study course, and must have approval of the IA Director.
- Undergraduate Honors Thesis on a topic clearly relevant to the major (approval of IA Director required)

## Foreign Language Experience

A major goal of the International Affairs major is for students to achieve a higher level of appreciation and awareness of cultures beyond their everyday experience.

Students must demonstrate their linguistic skills and higher level of appreciation of another culture, thereby satisfying the IA foreign language experience requirement, in any one of several ways.

1. Each student except international students who may submit their TOEFL score must have their language proficiency rated at the intermediate level in a language other than the student's home language. The American Council on the Teaching of Foreign Languages (ACTFL) provides such a rating through the Oral Proficiency Interview (OPI). An evaluation of the "Intermediate (Low, Mid or High)" on the OPI will satisfy the Foreign Language Experience requirement; no student whose rating is "Novice High" or below will be considered to have completed the Foreign Language Experience requirement.
2. A learning abroad experience, which includes study abroad, research abroad, and internships abroad, followed by evaluation on the OPI.
3. International students are permitted to meet the language requirement with their TOEFL score, but are encouraged to undertake further foreign language study.
4. Students cannot meet the language requirement in their native language.

To acquire sufficient proficiency, students will normally receive instruction in the Department of Modern Languages and Classics.

Minimum preparation is assumed to be six (6) credits at the 300 level or above in French or Spanish or its recommended equivalent in a language taught in the VOX sequence of courses (Critical Languages). Students who choose one of the Critical Languages must plan to participate in an intensive immersion experience (in the United States or abroad) or study abroad in

immersion. Before embarking on a Critical Language path, students must consult with the IA Director to determine that there is an available ACTFL OPI in that language.

Proficiency testing is a standard means of assessing what one can do in a language. The OPI was developed by the American Council on the Teaching of Foreign Languages (ACTFL) based on the Inter-Agency Language Roundtable scale used by the Foreign Service, and is employed by many American colleges and universities. Detailed descriptors can be found on the ACTFL website. Testing is administered exclusively by Language Testing International.

Students are advised that there is a fee associated with the OPI for which they are responsible. Assistance in making arrangements for taking the OPI will be provided by the IA Director, who will also advise students of its current cost and method of payment. Students may either register for the OPI involving a telephonic interview with a certified ACTFL tester or the OPIc, a computer delivered assessment that emulates its live counterpart.

## Thematic Concentration Requirements - 21-27 credit hours

Thematic concentrations are designed to provide students with substantial, in-depth, and focused study of an aspect of International Affairs. Students must select one concentration from below and take a minimum of 7 courses up to a maximum of 9 courses from that concentration; at least 2 courses must be in a secondary field. Other thematic concentrations may be created in the future.

### A. International Security:

(POS as primary field):

- ANT 249 - Religion and Violence Credits: 3
- ANT 458 - Anthropology of War Credits: 3
- HTY 279 - European Military History Credits: 3
- HTY 473 - History of U.S. Foreign Relations I Credits: 3
- HTY 474 - History of U.S. Foreign Relations II Credits: 3
- HTY 487 - The First World War Credits: 3
- POS 273 - International Relations Credits: 3
- POS 369 - Topics in International Relations Credits:
- POS 370 - International Terrorism: The Challenges for America Credits: 3
- POS 374 - American Foreign Policy Credits: 3
- POS 375 - United States and the Middle East Credits: 3
- POS 474 - Conduct of Foreign Policy Credits: 3
- POS 475 - International Security Credits: 3
- POS 476 - Seminar in World Politics Credits: 3
- SOC 208 - Problems of Violence and Terrorism Credits: 3

### B. History and Development of the Global System

(HTY as primary field):

- ANT 249 - Religion and Violence Credits: 3

- ANT 256 - Ethnic Conflict Credits: 3
- ANT 454 - Cultures and Societies of the Middle East Credits: 3
- GEO 275 - Geography of Globalization Credits: 3
- HTY 240 - Creation of the Atlantic World, 1450-1888 Credits: 3
- HTY 275 - Geography of Globalization Credits: 3
- HTY 279 - European Military History Credits: 3
- HTY 407 - The Age of Monarchs and Revolution: Europe, 1648-1815 Credits: 3
- HTY 408 - 19th Century Europe, 1815-1914 Credits: 3
- HTY 409 - Twentieth Century Europe I, 1914-1945 Credits: 3
- HTY 410 - 20th Century Europe II, Since 1945 Credits: 3
- HTY 442 - The United States and Vietnam: A History Credits: 3
- HTY 446 - History of Modern Middle East, 1800-Present Credits: 3
- HTY 450 - History of the British Empire Credits: 3
- HTY 473 - History of U.S. Foreign Relations I Credits: 3
- HTY 474 - History of U.S. Foreign Relations II Credits: 3
- HTY 487 - The First World War Credits: 3
- POS 273 - International Relations Credits: 3
- POS 369 - Topics in International Relations Credits:
- POS 476 - Seminar in World Politics Credits: 3
- POS 470 - International Law Credits: 3

## C. Comparative Politics and Area Studies

(POS as primary field):

- ANT 465 - Political Anthropology Credits: 3
- ANT 470 - Religion and Politics Credits: 3
- POS 241 - Introduction to Comparative Politics Credits: 3
- POS 336 - Government and Politics in Russia Credits: 3
- POS 337 - Government and Politics in Eurasia Credits: 3
- POS 368 - China Credits: 3
- POS 372 - Canadian Foreign Policy Credits: 3
- POS 467 - African Politics Credits: 3
- POS 470 - International Law Credits: 3

## D. Culture, Conflict, and Globalization

Required Anthropology core class and capstone (C or better):

- ANT 102 - Introduction to Anthropology: Diversity of Cultures Credits: 3
- ANT 493 - Capstone in Anthropology: What does it mean to be human? Credits: 3

Electives 21 credits (C or better):

- ANT 120 - Religions of the World Credits: 3
- ANT 245 - Sex and Gender in Cross-Cultural Perspective Credits: 3
- ANT 249 - Religion and Violence Credits: 3
- ANT 250 - Conservation Anthropology: The Socio-Cultural Dimension of Environmental Issues Credits: 3
- ANT 252 - Civilization in South Asia Credits: 3
- ANT 256 - Ethnic Conflict Credits: 3
- ANT 261 - Islamic Fundamentalism Credits: 3
- ANT 421 - Inca Society and Peasants of the Andes Credits: 3
- ANT 430 - Who Owns Native Cultures? Credits: 3
- ANT 441 - People and Cultures of the Pacific Islands Credits: 3
- ANT 448 - Ethnography Through Film Credits: 3
- ANT 451 - Native American Cultures and Identities Credits: 3
- **or**
- NAS 451 - Native American Cultures and Identities Credits: 3
- ANT 454 - Cultures and Societies of the Middle East Credits: 3
- ANT 458 - Anthropology of War Credits: 3
- ANT 464 - Ecological Anthropology Credits: 3
- ANT 465 - Political Anthropology Credits: 3
- ANT 466 - Economic Anthropology Credits: 3
- ANT 470 - Religion and Politics Credits: 3
- GEO 100 - World Geography Credits: 3
- GEO 275 - Geography of Globalization Credits: 3
- HTY 107 - East Asian Civilization I Credits: 3
- HTY 110 - Introduction to Modern Latin America Credits: 3
- HTY 112 - Introduction to Africa Credits: 3
- HTY 240 - Creation of the Atlantic World, 1450-1888 Credits: 3
- HTY 241 - History of Globalization, 1900-Present Credits: 3
- POS 120 - Introduction to World Politics Credits: 3
- POS 273 - International Relations Credits: 3
- POS 467 - African Politics Credits: 3
- WGS 340 - Transnational Feminisms Credits: 3
- WGS 371 - Immigration, Women and Society Credits: 3

## E. Economics

(IA-ECO):

- ECO 120 - Principles of Microeconomics Credits: 3
- ECO 321 - Intermediate Macroeconomics Credits: 3
- ECO 339 - International Finance Credits: 3
- ECO 340 - The Canadian Economy: Issues and Policies Credits: 3
- ECO 350 - Intermediate Microeconomic Theory Credits: 3
- ECO 353 - Money and Banking Credits: 3
- ECO 366 - Applied Economic Data Analysis Credits: 3
- ECO 381 - Sustainable Development Principles and Policy Credits: 3
- ECO 450 - International Environmental Economics and Policy Credits: 3
- ECO 470 - Topics in Economics Credits: 1-3

- ECO 496 - Field Experience in Economics Credits: 3
- ECO 497 - Independent Studies Credits: 1-3
- 2 non-ECO courses related to international issues or topics from the same secondary field

## F. Language, Culture and the Humanities

(MLC as primary field):

21 credits at the 300 or 400 level in French or Spanish beyond the IA Language Experience Requirement (ACTFL OP rating of "Intermediate"), and 6 credits in a single discipline outside Modern Languages and Classics.

- 1 course in advanced-intermediate (300 level) or advanced (400 level) target language grammar or linguistics
- 1 course in the development of speaking skills
- 1 course in the literature of the target language
- 1 course in the target culture, civilization, or contemporary society
- 1 travel study course in immersions (waived for a semester, year or intensive summer study abroad in immersion)
- 2 electives taught in the target language

AND

2 courses in any one of the disciplines listed below. Courses from these disciplines should be selected in consultation with the academic advisor to insure their relevance to the concentration. They may not be used to satisfy the IA Core Requirement

- Anthropology
- Art History
- English
- History
- Music
- Peace Studies
- Philosophy

## G. Canadian Studies

The Canadian Studies program at the University of Maine is the only area studies program at a state university in New England that is recognized by the US Department of Education under its Title VI International Education program.

From the list below, IA majors with a Canadian Studies concentration must take CAN 101 and and eight other listed courses. At least two of which must be in the same discipline. **Students in the Canadian Studies concentration must meet the IA language requirement in French.**

### Canadian Studies Required Course

- CAN 101 - Introduction to Canadian Studies Credits: 3

### Canadian Studies Approved Courses

Choose 8 courses, 2 from the same discipline.

- CAN 401 - Readings in Canadian Studies Credits: 3
- ECO 340 - The Canadian Economy: Issues and Policies Credits: 3
- ENG 236 - Intro to Canadian Literature Credits: 3
- ENG 336 - Canadian Literature Credits: 3
- ENG 429 - Topics in Literature and Language Credits: 3
- FRE 397 - French (May Term) Credits: 3
- FRE 463 - Quebec Poetry Credits: 3
- FRE 464 - Quebec Theatre Credits: 3
- FRE 465 - North American French Novel Credits: 3
- FRE 490 - Advanced Topics in French Credits: 1-3
- GEO 349 - Early Modern North America in Atlantic Perspective Credits: 3
- HTY 312 - Furs, Frontiers, and Fame: North American Exploration Credits: 3
- HTY 459 - Colonial Canada Credits: 3
- HTY 460 - Modern Canada Credits: 3
- HTY 481 - Amerindians of the Northeast: A History Credits: 3
- HTY 599: Special Topics in History (Canadian Nationalism and Myths)
- POS 243 - Canadian Government and Politics Credits: 3
- POS 344 - Public Policy in Canada Credits: 3
- POS 372 - Canadian Foreign Policy Credits: 3

## H. Global Women's, Gender, and Sexuality Issues

Women's Studies (now Women's, Gender, and Sexuality Studies) has been part of the International Affairs major for a decade. Its importance to the field of International Affairs is made clear by the recent explosion of scholarly works that combine gender with an international focus and by the increasing attention to the role that gender plays in politics, conflict, international aid, and sustainability. It is impossible to turn on the network or internet news without seeing at least one article related to an international women's and/or gender issue. The Global Women's Gender, and Sexuality Issues Concentration provides an important option for students who want to explore interdisciplinarity explicitly.

### Required:

- WGS 101 - Women's, Gender and Sexuality Studies Credits: 3
- WGS 340 - Transnational Feminisms Credits: 3

### Core Courses and Non-WGS courses

From the list below students must take 3 WGS core courses of their choice, and must select two non-WGS courses with the same designator (for example: ANT):

### WGS Core Courses

- ANT 245 - Sex and Gender in Cross-Cultural Perspective Credits: 3
- CHF 404 - Selected Topics in Child Development and Family Life Credits: 3  
(Topics in Family Studies: Cross-Cultural Perspectives on Gender and Violence)  
(Topics in Family Studies: Human Sexuality in Europe)
- SOC 330 - Perspectives on Women Credits: 3
- SOC 371 - Immigration, Women and Society Credits: 3
- WGS 103 - Introduction to Lesbian, Gay, Bisexual, and Transgender Studies Credits: 3
- WGS 201 - Topics in Women's, Gender, and Sexuality Studies Credits: 3
- WGS 235 - Franco American Women's Experience Credits: 3
- WGS 250 - Women and Music Credits: 3
- WGS 270 - Native American Women Credits: 3
- **or**
- NAS 270 - Native American Women Credits: 3
- PAX 401 - Women Social Activists: Warriors for Peace and Justice Credits: 3
- WGS 401 - Advanced Topics in Women's, Gender, and Sexuality Studies Credits: 3  
(Topic: Amazons: A Multicultural Perspective)
- WGS 410 - Feminist, Gender and Queer Theory Credits: 3

## Additional Courses

- ANT 120 - Religions of the World Credits: 3
- ANT 261 - Islamic Fundamentalism Credits: 3
- HTY 449 - History of South Africa Credits: 3
- HTY 450 - History of the British Empire Credits: 3
- POS 241 - Introduction to Comparative Politics Credits: 3
- POS 273 - International Relations Credits: 3

## Journalism

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0.

**Minimum Grade requirements for courses to count toward major:** A grade of C- or better is required for all other CMJ courses to fulfill a major requirement.

**Other GPA requirements to graduate:** A minimum cumulative GPA of 2.0 ("C") in the major.

**Required Course(s) for fulfilling Capstone Experience:** CMJ 481 or CMJ 484 or CMJ 489

**Contact Information:** Nathan Stormer, Chair, 430 Dunn Hall, 581-1938

The Department of Communication and Journalism offers three different B.A. degrees. These degrees are in: Communication, Journalism, and Mass Communication.

The B.A. in Journalism requires coursework that prepares students for leadership roles in journalism careers. 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. Full-time faculty members are established scholars who draw on professional experience and ongoing contacts with journalism organizations. An active internship program encourages students to become acquainted with working in media organizations, and thus have demonstrable work experience, professional contacts and an understanding of the industry before they enter the job market.

Majors in Journalism must complete a minimum of thirty (30) credits of specific CMJ courses to fulfill the core course internship experience, capstone and professional course requirements.

Students must also fulfill the external course requirements.

The external coursework must include at least 9 credits in the areas of Writing and Language.

The 9 credits of coursework in the areas of Writing and Language must include at least 3 credits in each of the two areas (6 credits from one area; 3 credits from the other). The Writing area includes the following courses: ENG 205, ENG 206, ENG 212, ENG 301, ENG 317, ENG 415, ENG 416, and ENG 418. CMJ 237 can also be used to meet part of this requirement when not used to meet a Journalism major requirement. The Language area includes: French, German, Spanish, American Sign Language or other non-English languages.

The requirements listed on this page are specific to this particular major. Students are also responsible for meeting any graduation requirements set out by their college. Students in the College of Liberal Arts and Sciences (CLAS) should make sure to review those requirements as stated on the College of Liberal Arts & Sciences page of the catalog.

## Requirements for Journalism Majors:

For students transferring equivalent courses from other colleges, 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.

Students must earn a grade of "B" or better in CMJ 236 and pass a writing exam in order to continue in the Journalism major and take courses in the professional course requirement list: CMJ 237, CMJ 332, CMJ 351, CMJ 434, CMJ 435, CMJ 481, CMJ 484 and CMJ 489, as well as CMJ 395.

A grade of "C-" or better is required in all CMJ courses submitted to satisfy departmental requirements for the major.

## Core Course Requirements - 3 courses(9 credits)

- CMJ 211 - Journalism Studies I: Introduction and History Credits: 3
- CMJ 236 - Journalism Writing and Editing Credits: 3
- CMJ 375 - Journalism Studies II: Law and Ethics Credits: 3
- Journalism Major Writing Exam

## Capstone Requirement: (select 1 course; 3 or 4 credits)

- CMJ 481 - Digital Journalism Credits: 4



- CMJ 484 - Investigative Journalism Credits: 3
- CMJ 489 - Seminar in Media Ethics and Issues Credits: 3

### Internship Requirement: (3 credits)

- CMJ 395 - Student Media Practicum Credits: 1-3  
or
- CMJ 495 - Internship Credits: 1-3

### Professional Course Requirement: 3 or more courses (9 or more credits)

- CMJ 237 - Journalism Across Platforms Credits: 4
- CMJ 332 - Public Affairs Reporting and Research Credits: 3
- CMJ 351 - Multimedia Production Credits: 4
- CMJ 434 - Editorial and Opinion Writing Credits: 3
- CMJ 435 - Feature Writing Credits: 3
- CMJ 481 - Digital Journalism Credits: 4
- CMJ 484 - Investigative Journalism Credits: 3
- CMJ 489 - Seminar in Media Ethics and Issues Credits: 3
- CMJ 491 - Advanced Topics in Journalism Credits: 3

Electives: (Up 6 credit hours may be taken to complete 30 credit hours required; only 3 credits from CMJ 100 or 107 may count toward the major).

- CMJ 100 - Introduction to Mass Communication Credits: 3
- CMJ 107 - Communication and the Environment Credits: 3
- CMJ 245 - Film Criticism and Theory Credits: 3
- CMJ 261 - Photographic Reporting and Storytelling Credits: 3
- CMJ 314 - International Mass Communication Credits: 3
- CMJ 330 - Copy Editing Credits: 3
- CMJ 347 - Argument and Critical Thinking Credits: 3
- CMJ 361 - Documentary Photography and Audio Credits: 3
- CMJ 367 - Public Relations Credits: 3
- CMJ 370 - Visual Communication Credits: 3
- CMJ 376 - Modes of Media Criticism Credits: 3
- CMJ 380 - Advertising, Media and Society Credits: 3
- CMJ 391 - Topics in Journalism Credits: 3
- CMJ 403 - Persuasion and Social Influence Credits: 3
- CMJ 410 - Social Influence of Mass Communication Credits: 3
- CMJ 412 - Electronic Media Management and Programming Credits: 3
- CMJ 425 - Health Campaigns: Service Learning Credits: 3

- CMJ 475 - Sexualities in Mass Communication Credits: 3
- CMJ 480 - Media Theories and Research Methods Credits: 3
- CMJ 491 - Advanced Topics in Journalism Credits: 3
- CMJ 500-level courses with department approval Credits: 3

## Additional credits:

Students may also take additional credits in department courses beyond the 30 required for the major, but must take at least **72** credit hours outside of CMJ courses.

## Required Courses in Suggested Sequence for the B.A. in Journalism (Broadcast Journalism Sequence)

### First Year - First Semester

- ENG 101 - College Composition Credits: 3
- General Education Human Values/Social Context Credits: 12

### First Year - Second Semester

- CMJ 236 - Journalism Writing and Editing Credits: 3
- General Education Science or Mathematics/Statistics Credits: 3
- General Education Human Values/Social Context Credits: 6
- \*\*Electives Credits: 3

### Second Year - First Semester

- CMJ 211 - Journalism Studies I: Introduction and History Credits: 3
- General Education Science or Mathematics/Statistics Credits: 3
- CMJ External Requirement Credits: 3
- CMJ Journalism Elective Credits: 3
- \*\*Electives Credits: 3

### Second Year - Second Semester

- CMJ 237 - Journalism Across Platforms Credits: 4
- BA Upper Level Requirement Credits: 3
- CMJ External Requirements Credits: 9

### Third Year - First Semester

- CMJ 332 - Public Affairs Reporting and Research Credits: 3  
or
- CMJ 351 - Multimedia Production Credits: 4
- CMJ External Requirements Credits: 3
- BA Upper Level Requirement Credits: 3
- CMJ Journalism Elective Credits: 3
- General Education Science or Mathematics/Statistics Credits: 3

### Third Year - Second Semester

- CMJ 481 - Digital Journalism Credits: 4  
or
- CMJ 484 - Investigative Journalism Credits: 3
- CMJ 375 - Journalism Studies II: Law and Ethics Credits: 3
- BA Upper Level Requirement Credits: 3
- General Education Science or Mathematics/Statistics Credits: 3
- CMJ External Requirement Credits: 3

### Fourth Year - First Semester

- CMJ 332 - Public Affairs Reporting and Research Credits: 3  
or
- CMJ 351 - Multimedia Production Credits: 4
- CMJ External Requirement Credits: 9
- \*\*Elective Credits: 6

### Fourth Year - Second Semester

- CMJ 481 - Digital Journalism Credits: 4  
or
- CMJ 484 - Investigative Journalism Credits: 3
- CMJ 489 - Seminar in Media Ethics and Issues Credits: 3
- \*\*Elective Credits: 9

### \*\*Elective Credits

Elective Credits may be used to meet remaining General Education, college, B.A., or department requirements.

# Mass Communication

## OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0.

**Minimum Grade requirements for courses to count toward major:** A grade of C- or better is required for all CMJ courses to fulfill a major requirement.

**Other GPA requirements to graduate:** A minimum accumulative GPA of 2.0 ("C") in the major.

**Required Course(s) for fulfilling Capstone Experience:** CMJ 483

**Contact Information:** Nathan Stormer, Chair, 430 Dunn Hall, 581-1938

The Department of Communication and Journalism offers three different B.A. degrees. These degrees are in: Communication, Journalism, and Mass Communication.

Firmly grounded in the liberal arts, the B.A. degree in Mass Communication provides students with a broad understanding of the roles of media in society. The degree prepares students for careers in the media and provides background in mass communication theories and research issues necessary for graduate study in related communication fields, the humanities and social sciences.

Majors in Mass Communication must complete a minimum of thirty (30) credits of required CMJ courses and additional coursework external to the major.

The external coursework must include at least 9 credits in the areas of Writing and Language.

The 9 credits of coursework in the areas of Writing and Language must include at least 3 credits in each of the two areas (6 credits from one area; 3 credits from the other). The Writing area includes the following courses: ENG 205, ENG 206, ENG 212, ENG 301, ENG 317, ENG 415, ENG 416, and ENG 418. CMJ 236 and CMJ 237 can also be used to meet part of this requirement for Mass Communication majors. The Language area includes: French, German, Spanish, American Sign Language or other non-English languages.

The requirements listed on this page are specific to this particular major. Students are also responsible for meeting any graduation requirements set out by their college. Students in the College of Liberal Arts and Sciences (CLAS) should make sure to review those requirements as stated on the College of Liberal Arts & Sciences page of the catalog.

## Requirements for Mass Communication Majors:

For students transferring equivalent courses from other colleges 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.

## Core Course Requirements - 3 courses (9 credits)

- CMJ 203 - Mass Communication Studies Credits: 3
- CMJ 376 - Modes of Media Criticism Credits: 3

- CMJ 483 - Capstone Seminar in Mass Communication Credits: 3

Major Course Requirements - 7 courses from the following list (21 credits) Only 3 credits from CMJ 100 or 107 may count toward the major.

- CMJ 100 - Introduction to Mass Communication Credits: 3
- CMJ 107 - Communication and the Environment Credits: 3
- CMJ 211 - Journalism Studies I: Introduction and History Credits: 3
- CMJ 245 - Film Criticism and Theory Credits: 3
- CMJ 314 - International Mass Communication Credits: 3
- CMJ 367 - Public Relations Credits: 3
- CMJ 370 - Visual Communication Credits: 3
- CMJ 375 - Journalism Studies II: Law and Ethics Credits: 3
- CMJ 380 - Advertising, Media and Society Credits: 3
- CMJ 398 - Topics in Mass Communication Credits: 3
- CMJ 402 - Communication Research Credits: 3
- CMJ 403 - Persuasion and Social Influence Credits: 3
- CMJ 410 - Social Influence of Mass Communication Credits: 3
- CMJ 412 - Electronic Media Management and Programming Credits: 3
- CMJ 425 - Health Campaigns: Service Learning Credits: 3
- CMJ 430 - Intercultural Communication Credits: 3
- CMJ 450 - Communication and Technology Credits: 3
- CMJ 475 - Sexualities in Mass Communication Credits: 3
- CMJ 480 - Media Theories and Research Methods Credits: 3
- CMJ 498 - Advanced Topics in Mass Communication Credits: 3
- CMJ 500 level courses with departmental permission

### Additional credits:

Students also may take additional credits in department courses beyond the 30 required for the major, but must take at least **72** credit hours outside of CMJ courses.

## Required Courses in Suggested Sequence for BA in Mass Communication

### First Year - First Semester

- CMJ 100 - Introduction to Mass Communication Credits: 3
- **OR**
- CMJ 107 - Communication and the Environment Credits: 3 **OR**
- Other CMJ Major Course Requirement Credits: 3
- ENG 101 - College Composition Credits: 3
- General Education Human Values/Social Context Credits: 9

## First Year - Second Semester

- CMJ 211 - Journalism Studies I: Introduction and History Credits: 3
- General Education Science or Mathematics/Statistics Credits:3
- General Education Human Values/Social Context Credits:6  
or
- Other CMJ Major Course Requirement Credits: 3

## Second Year - First Semester

- CMJ 203 - Mass Communication Studies Credits: 3
- BA Upper Level Requirement Credits: 3
- General Education Science or Mathematics/Statistics Credits:3
- CMJ External Requirements Credits:6

## Second Year - Second Semester

- CMJ Major Requirements Credits: 6
- CMJ External Requirements Credits: 6
- \*\* Elective Credits: 3

## Third Year - First Semester

- CMJ 376 - Modes of Media Criticism Credits: 3
- General Education Science or Mathematics/Statistics Credits: 3
- CMJ External Requirement Credits:3
- CMJ Major Course Requirement Credits:3
- BA Upper Level Requirement Credits:3

## Third Year - Second Semester

- CMJ Major Course Requirement Credits: 6
- CMJ External Requirement Credits:3
- BA Upper Level Requirement Credits:3
- General Education Science or Mathematics/Statistics Credits: 3

## Fourth Year - First Semester

- CMJ 3xx or 4xx Major Course Requirement Credits: 3
- CMJ External Requirements Credits: 6
- \*\* Elective Credits: 3

## Fourth Year - Second Semester

- CMJ 483 - Capstone Seminar in Mass Communication Credits: 3
- \*\* Elective Credits: 12

## \*\*Elective Credits

Elective Credits may be used to meet remaining General Education, college, B.A., or department requirements.

# Mathematics

## OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** A "C" or better is required in all Math (MAT) courses.

**Other GPA requirements to graduate:** A minimum accumulative GPA of 2.0 ("C") in the major.

**Required Course(s) for fulfilling Capstone Experience:** MAT 401

**Contact Information:** Nigel Pitt, Chair, Mathematics & Statistics, 581-3901, 333 Neville Hall.

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 during the academic year. Faculty, graduate assistants, and junior and senior mathematics majors staff the laboratory.

### 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.

The requirements listed on this page are specific to this particular major. Students are also responsible for meeting any graduation requirements set out by their college. Students in the College of Liberal Arts and Sciences (CLAS) should make sure to review those requirements as stated on the College of Liberal Arts & Sciences page of the catalog.

## Core Mathematics Courses

## First and Sophomore Years:

- MAT 126 - Calculus I Credits: 4
- MAT 127 - Calculus II Credits: 4
- MAT 228 - Calculus III Credits: 4
- MAT 261 - Introduction to Abstract Mathematics Credits: 3
- MAT 262 - Linear Algebra Credits: 3

## Junior and Senior Years:

- MAT 401 - Capstone Seminar in Mathematics Credits: 3
- MAT 425 - Introduction to Real Analysis I Credits: 3
- MAT 463 - Introduction to Abstract Algebra I Credits: 3
- STS 434 - Introduction to Statistics Credits: 4

## 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. (Credits: 12)

Total MAT Credits = 43.

## Second major or minor

As with all departments within the College of Liberal Arts and Sciences (CLAS), each mathematics major must complete a second major or a minor in a second academic discipline.

## Required Courses in Suggested Sequence for the BA in Mathematics

### First Year - First Semester

- ENG 101 - College Composition Credits: 3
- MAT 126 - Calculus I Credits: 4
- Electives (Including courses for completing the University general education requirements) Credits: 7-10

### First Year - Second Semester

- MAT 127 - Calculus II Credits: 4
- Electives (Including courses for completing the University general education requirements) Credits: 11-14



## Second Year - First Semester

- MAT 228 - Calculus III Credits: 4
- MAT 261 - Introduction to Abstract Mathematics Credits: 3
- Electives (Including courses for completing the University general education requirements) Credits: 5-8

## Second Year - Second Semester

- MAT 262 - Linear Algebra Credits: 3
- Minor course Credits: 3-6
- Electives (Including courses for completing the University general education requirements) Credits: 6-10

## Third Year - First Semester

- MAT 425 - Introduction to Real Analysis I Credits: 3
- MAT 463 - Introduction to Abstract Algebra I Credits: 3
- Second major or minor course Credits: 3-6
- Electives (Including courses for completing the University general education requirements) Credits: 8-12

## Third Year - Second Semester

- One or two MAT courses for the upper-level Concentration Credits: 3-6
- Second major or minor course Credits: 3-6
- Electives (Including courses for completing the University general education requirements) Credits: 3-6

## Fourth Year - First Semester

- One or two MAT courses for the upper-level Concentration Credits: 3-6
- Second major or minor course Credits: 3-6
- Electives (Including courses for completing the University general education requirements) Credits: 3-6

## Fourth Year - Second Semester

- MAT 401 - Capstone Seminar in Mathematics Credits: 3
- MAT course for the upper-level Concentration Credits: 3
- Outside Second major or minor course Credits: 3-6
- Electives (Including courses for completing the University general education requirements) Credits: 3-6

## 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

**Please note:** This major is not currently accepting new students as it is in the process of having its curriculum revised. Prospective students interested in pursuing this major should contact the Chair for advisement.

**Contact Information:** Jane Smith, Chair of Modern Languages and Classics, 201 Little Hall, 581-2075, jane.smith@umit.maine.edu

## Music

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** None.

**Minimum Grade requirements for courses to count toward major:** A "C-" or better is required in all music courses required for the major, including electives taken to meet the music requirements. Any student who receives a semester grade lower than "C-" for applied lessons is automatically dropped from the program and must re-audition for re-admission.

**Other GPA requirements to graduate:** A minimum accumulative GPA of 2.0 ("C") in the major.

**Required Course(s) for fulfilling Capstone Experience:** MUS 498

**Contact Information:** Beth Wiemann, Chair, Class of 1944 Hall, 581-1244

### 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. Music Education majors must also submit an essay one week prior to their audition. (Consult the Music Division Undergraduate Handbook for details.) 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. 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. 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 (3 credits) will be chosen from one of the following areas: a research paper, an original composition, or a lecture/recital by special permission.

The requirements listed on this page are specific to this particular major. Students are also responsible for meeting any graduation requirements set out by their college. Students in the College of Liberal Arts and Sciences (CLAS) should make sure to review those requirements as stated on the College of Liberal Arts & Sciences page of the catalog.

## **B.A. Music Requirements**

- MUH 201 - History of Western Music I Credits: 2
- MUH 202 - History of Western Music II Credits: 2
- MUL 200 - Music Literature Laboratory Credits: 1
- MUL 202 - The Art of Listening to Music: Historical Survey Credits: 3
- MUS 498 - Senior Project Credits: 3
- MUY 111 - Elementary Harmony I Credits: 2
- MUY 112 - Elementary Harmony II Credits: 2
- MUY 211 - Advanced Harmony I Credits: 2
- MUY 212 - Advanced Harmony II Credits: 2
- Choose 5 credits from the following six courses:
- MUY 310 - Jazz Improvisation I Credits: 3
- MUY 315 - Twentieth Century Musical Techniques Credits: 2
- MUY 422 - Tonal Counterpoint Credits: 2

- MUY 451 - Form and Analysis Credits: 3
- MUY 452 - Orchestration Credits: 3
- MUY 461 - Composition I (Small Forms) Credits: 2
- Recital Laboratory (each semester of applied lessons) Credits: 0
- Music Organizations (4 semesters -3 large ensemble, 1 small ensemble) Credits: 4
- Music electives (theory or history beyond core requirements) Credits: 9
- Piano proficiency (satisfied by exam or completion of piano class series) Credits: 0
- Applied Music Lessons Credits: 8
- Foreign Language Credits: 6

## Required Courses in Suggested Sequence for the B.A. in Music

### First Year - First Semester

- MUL 200 - Music Literature Laboratory Credits: 1
- MUL 202 - The Art of Listening to Music: Historical Survey Credits: 3
- MUY 111 - Elementary Harmony I Credits: 2
- Applied Music Lessons Credits: 1
- Recital Laboratory Credits: 0
- Music Organization Credits: 1
- Language Credits: 3-4
- General Education or college requirements Credits: 3

### First Year - Second Semester

- MUY 112 - Elementary Harmony II Credits: 2
- Applied Music Lessons. Credits: 1
- Recital Laboratory Credits: 0
- Music Organization Credits: 1
- Language Credits: 3-4
- General Education or college requirements Credits: 7

### Second Year - First Semester

- MUH 201 - History of Western Music I Credits: 2
- MUY 211 - Advanced Harmony I Credits: 2
- Applied Music Lessons Credits: 1
- Recital Laboratory Credits: 0
- Music Organization Credits: 1
- General Education or college requirements Credits: 8

## Second Year - Second Semester

- MUH 202 - History of Western Music II Credits: 2
- MUY 212 - Advanced Harmony II Credits: 2
- Applied Music Lessons Credits: 1
- Recital Laboratory Credits: 0
- Music Organization Credits: 1
- General Education or college requirements Credits: 8

## Third Year - First Semester

- MUY 3XX or 4XX Credits: 2-3
- Applied Music Lessons Credits: 1
- Recital Laboratory Credits: 0
- Music Organization Credits: 0
- General Education or college requirements Credits: 12

## Third Year - Second Semester

- MUY 3XX or 4XX Credits: 2-3
- Applied Music Lessons Credits: 1
- Recital Laboratory Credits: 0
- Music Organization Credits: 0
- General Education or college requirements Credits: 12

## Fourth Year - First Semester

- Applied Music Lessons Credits: 1
- Recital Laboratory Credits: 0
- Music Organization Credits: 0
- Music Electives Credits: 6
- General Education or college requirements Credits: 9

## Fourth Year - Second Semester

- Applied Music Lessons Credits: 1
- Music Organization Credits: 0
- Recital Laboratory Credits: 0
- Music Elective Credits: 3
- Senior Project Credits: 3
- General Education or college requirements Credits: 8

# Music Education

## OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 130

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** A "C-" or better is required in all music courses required for the major, including electives taken to meet the music requirements. Any student who receives a semester grade lower than "C-" for applied lessons is automatically dropped from the program and must re-audition for re-admission.

**Other GPA requirements to graduate:** A minimum accumulative GPA of 2.0 ("C") in the major.

**Required Course(s) for fulfilling Capstone Experience:** 12 credits of EHD 494

**Contact Information:** Beth Wiemann, Chair, Class of 1944 Hall, 581-1244

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 concentration or a vocal concentration, however, a double concentration (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. All students in the music education degree must successfully complete a comprehensive methods proficiency exam before the student teaching capstone experience.

### **Bachelor of Music in Music Education Ensemble Requirements**

(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.

#### **Guitar Students:**

Follow requirements for either Vocal or Instrumental concentration.

Piano concentration: Vocal Track: Follow requirements for Vocal concentration. Piano concentration: Instrumental Track: Follow requirements for Instrumental concentration. See Music Division Undergraduate Handbook for a list of large and small ensembles.

The requirements listed on this page are specific to this particular major. Students are also responsible for meeting any graduation requirements set out by their college. Students in the College of Liberal Arts and Sciences (CLAS) should make sure to review those requirements as stated on the College of Liberal Arts & Sciences page of the catalog.

## Required Courses in Suggested Sequence for the B.M. in Music Education

B.M. Degree in Music Education - Piano concentration: Instrumental Track

## First Year - First Semester

- MUL 200 - Music Literature Laboratory Credits: 1
- MUL 202 - The Art of Listening to Music: Historical Survey Credits: 3
- MUO XXX Ensemble(s) Credits: 1
- MUS 100 - Recital Laboratory Credits: 0
- MUS 210 - Applied Music Lessons Credits: 2
- MUS 316 - Piano Literature I Credits: 1
- MUY 111 - Elementary Harmony I Credits: 2
- MUY 113 - Elementary Sight Singing and Ear Training I Credits: 2
- General Education Requirement Credits: 6

## First Year - Second Semester

- MUE 207 - Voice Class Credits: 1
- MUO XXX Ensemble(s) Credits: 1
- MUS 100 - Recital Laboratory Credits: 0
- MUS 210 - Applied Music Lessons Credits: 2
- MUS 318 - Piano Literature II Credits: 1
- MUY 112 - Elementary Harmony II Credits: 2
- MUY 114 - Elementary Sight Singing and Ear Training II Credits: 2
- General Education Requirement Credits: 9

## Second Year - First Semester

- EHD 202 - Education in a Multicultural Society Credits: 3
- MUE 209 - String Class Credits: 2
- MUE 210 - Introduction to Music Education Credits: 3
- MUE 213 - Woodwinds I Credits: 1
- MUH 201 - History of Western Music I Credits: 2
- MUO XXX Ensemble(s) Credits: 1
- MUP 251 - Collaborative Piano Credits: 1
- MUS 100 - Recital Laboratory Credits: 0
- MUS 210 - Applied Music Lessons Credits: 2
- MUY 211 - Advanced Harmony I Credits: 2
- MUY 213 - Advanced Sight Singing and Ear Training I Credits: 2

## Second Year - Second Semester

- EHD 203 - Educational Psychology Credits: 3
- MUE 214 - Woodwinds II Credits: 1
- MUE 217 - Brass Class Credits: 2
- MUH 202 - History of Western Music II Credits: 2
- MUO XXX Ensemble(s) Credits: 1

- MUS 100 - Recital Laboratory Credits: 0
- MUS 210 - Applied Music Lessons Credits: 2
- MUY 212 - Advanced Harmony II Credits: 2
- MUY 214 - Advanced Sight Singing and Ear Training II Credits: 2

### Third Year - First Semester

- MUE 320 - Teaching of General Music: Elementary Credits: 3
- MUE 403 - Instrumental Laboratory Credits: 1
- MUO XXX Ensemble(s) Credits: 1
- MUP 340 - Basic Conducting Credits: 2
- MUS 100 - Recital Laboratory Credits: 0
- MUS 312 - Piano Pedagogy Credits: 1
- MUS 350 - Applied Music Lessons Credits: 2
- MUY XXX Music Theory Credits: 2-3
- General Education Requirements Credits: 3

### Third Year - Second Semester

- MUE 222 - Percussion Class Credits: 2
- MUE 321 - Teaching of General Music: Secondary Credits: 3
- MUO XXX Ensemble(s) Credits: 1
- MUP 345 - Instrumental Conducting and Literature Credits: 3
- MUP 405 - Keyboard Musicianship Credits: 2
- MUS 100 - Recital Laboratory Credits: 0
- MUS 350 - Applied Music Lessons Credits: 2
- MUY 452 - Orchestration Credits: 3
- General Education Requirement Credits: 3

### Fourth Year - First Semester

- MUE 401 - Organization and Development of the Instrumental Music Program Credits: 3
- MUO XXX Ensemble(s) Credits: 1
- SED 302 - Adapting Instruction for Students with Disabilities Credits: 3
- General Education Requirement Credits: 9

### Fourth Year - Second Semester

- EHD 494 - Student Teaching K-12 (Art or Music) Credits: 1 - 12

## Required Courses in Suggested Sequence for the B.M. in Music Education



B.M. Degree in Music Education - Piano concentration: Vocal Track

## First Year - First Semester

- MUE 207 - Voice Class Credits: 1
- MUL 200 - Music Literature Laboratory Credits: 1
- MUL 202 - The Art of Listening to Music: Historical Survey Credits: 3
- MUO XXX Ensemble(s) Credits: 1
- MUS 100 - Recital Laboratory Credits: 0
- MUS 210 - Applied Music Lessons Credits: 2
- MUS 316 - Piano Literature I Credits: 1
- MUY 111 - Elementary Harmony I Credits: 2
- MUY 113 - Elementary Sight Singing and Ear Training I Credits: 2
- General Education Requirement Credits: 3

## First Year - Second Semester

- MUS 100 - Recital Laboratory Credits: 0
- MUS 201 - Applied Music Lessons Credits: 1
- MUS 210 - Applied Music Lessons Credits: 2
- MUS 318 - Piano Literature II Credits: 1
- MUO XXX Ensemble(s) Credits: 1
- MUY 112 - Elementary Harmony II Credits: 2
- MUY 114 - Elementary Sight Singing and Ear Training II Credits: 2
- General Education Requirement Credits: 9

## Second Year - First Semester

- EHD 202 - Education in a Multicultural Society Credits: 3
- MUE 209 - String Class Credits: 2
- or
- MUE 217 - Brass Class Credits: 2
- or
- MUE 222 - Percussion Class Credits: 2
- or both
- MUE 213 - Woodwinds I Credits: 1
- MUE 214 - Woodwinds II Credits: 1
  
- MUE 210 - Introduction to Music Education Credits: 3
- MUH 201 - History of Western Music I Credits: 2
- MUO XXX Ensemble(s) Credits: 1
- MUP 251 - Collaborative Piano Credits: 1
- MUS 100 - Recital Laboratory Credits: 0
- MUS 201 - Applied Music Lessons Credits: 1
- MUS 210 - Applied Music Lessons Credits: 2
- MUY 211 - Advanced Harmony I Credits: 2

- MUY 213 - Advanced Sight Singing and Ear Training I Credits: 2

## Second Year - Second Semester

- EHD 203 - Educational Psychology Credits: 3
- MUH 202 - History of Western Music II Credits: 2
- MUS 100 - Recital Laboratory Credits: 0
- MUO XXX Ensemble(s) Credits: 1
- MUS 201 - Applied Music Lessons Credits: 1
- MUS 210 - Applied Music Lessons Credits: 2
- MUY 212 - Advanced Harmony II Credits: 2
- MUY 214 - Advanced Sight Singing and Ear Training II Credits: 2

## Third Year - First Semester

- MUE 320 - Teaching of General Music: Elementary Credits: 3
- MUO XXX Ensemble(s) Credits: 1
- MUP 340 - Basic Conducting Credits: 2
- MUS 100 - Recital Laboratory Credits: 0
- MUS 312 - Piano Pedagogy Credits: 1
- MUS 350 - Applied Music Lessons Credits: 2
- General Education Requirement Credits: 3
- MUY XXX Music Theory Credits: 2-3

## Third Year - Second Semester

- MUE 321 - Teaching of General Music: Secondary Credits: 3
- MUO XXX Ensemble(s) Credits: 1
- MUP 341 - Choral Conducting and Literature Credits: 3
- MUP 405 - Keyboard Musicianship Credits: 2
- MUS 100 - Recital Laboratory Credits: 0
- MUS 350 - Applied Music Lessons Credits: 2
- MUY 452 - Orchestration Credits: 3
- SED 302 - Adapting Instruction for Students with Disabilities Credits: 3
- General Education Requirement Credits: 3

## Fourth Year - First Semester

- MUE 400 - Choral Music Education Credits: 3
- MUS Elective Credits: 5
- General Education Requirement Credits: 9
- MUO XXX Ensemble(s) Credits: 1-2

## Fourth Year - Second Semester

- EHD 494 - Student Teaching K-12 (Art or Music) Credits: 1 - 12

## Required Courses in Suggested Sequence for the B.M. in Music Education

B.M. Degree in Music Education - Instrumental concentration

### First Year - First Semester

- MUL 200 - Music Literature Laboratory Credits: 1
- MUL 202 - The Art of Listening to Music: Historical Survey Credits: 3
- MUO XXX Ensemble(s) Credits: 1
- MUP 205 - Piano Class I Credits: 1
- MUS 100 - Recital Laboratory Credits: 0
- MUS 210 - Applied Music Lessons Credits: 2
- MUY 111 - Elementary Harmony I Credits: 2
- MUY 113 - Elementary Sight Singing and Ear Training I Credits: 2
- General Education Requirement Credits: 6

### First Year - Second Semester

- MUO XXX Ensemble(s) Credits: 1
- MUP 206 - Piano Class II Credits: 1
- MUS 100 - Recital Laboratory Credits: 0
- MUS 210 - Applied Music Lessons Credits: 2
- MUY 112 - Elementary Harmony II Credits: 2
- MUY 114 - Elementary Sight Singing and Ear Training II Credits: 2
- General Education Requirement Credits: 9

### Second Year - First Semester

- EHD 202 - Education in a Multicultural Society Credits: 3
- MUE 210 - Introduction to Music Education Credits: 3
- MUE 213 - Woodwinds I Credits: 1
- MUH 201 - History of Western Music I Credits: 2
- MUO XXX Ensemble(s) Credits: 1
- MUP 215 - Piano Class I Credits: 1
- MUS 100 - Recital Laboratory Credits: 0
- MUS 210 - Applied Music Lessons Credits: 2
- MUY 211 - Advanced Harmony I Credits: 2
- MUY 213 - Advanced Sight Singing and Ear Training I Credits: 2

## Second Year - Second Semester

- EHD 203 - Educational Psychology Credits: 3
- MUE 214 - Woodwinds II Credits: 1
- MUE 217 - Brass Class Credits: 2
- MUH 202 - History of Western Music II Credits: 2
- MUO XXX Ensemble(s) Credits: 1
- MUP 216 - Piano Class II Credits: 1
- MUS 100 - Recital Laboratory Credits: 0
- MUS 210 - Applied Music Lessons Credits: 2
- MUY 212 - Advanced Harmony II Credits: 2
- MUY 214 - Advanced Sight Singing and Ear Training II Credits: 2

## Third Year - First Semester

- MUE 207 - Voice Class Credits: 1
- MUE 209 - String Class Credits: 2
- MUE 320 - Teaching of General Music: Elementary Credits: 3
- MUE 403 - Instrumental Laboratory Credits: 1
- MUO XXX Ensemble(s) Credits: 1
- MUP 340 - Basic Conducting Credits: 2
- MUS 100 - Recital Laboratory Credits: 0
- MUS 350 - Applied Music Lessons Credits: 2
- MUY XXX Music Theory Credits: 3
- General Education Requirement Credits: 3

## Third Year - Second Semester

- MUE 222 - Percussion Class Credits: 2
- MUO XXX Ensemble(s) Credits: 1
- MUE 321 - Teaching of General Music: Secondary Credits: 3
- MUP 345 - Instrumental Conducting and Literature Credits: 3
- MUS 100 - Recital Laboratory Credits: 0
- MUS 350 - Applied Music Lessons Credits: 2
- MUY 452 - Orchestration Credits: 3
- General Education Requirement Credits: 3

## Fourth Year - First Semester

- MUE 401 - Organization and Development of the Instrumental Music Program Credits: 3
- MUS Elective Credits: 2
- MUO XXX Ensemble(s) Credits: 1
- SED 302 - Adapting Instruction for Students with Disabilities Credits: 3

- General Education Requirement Credits: 9

## Fourth Year - Second Semester

- EHD 494 - Student Teaching K-12 (Art or Music) Credits: 1 - 12

## Required Courses in Suggested Sequence for the B.M. in Music Education

B.M. Degree in Music Education - Vocal concentration

### First Year - First Semester

- MUL 200 - Music Literature Laboratory Credits: 1
- MUL 202 - The Art of Listening to Music: Historical Survey Credits: 3
- MUO XXX Ensemble(s) Credits: 1
- MUP 205 - Piano Class I Credits: 1
- MUS 100 - Recital Laboratory Credits: 0
- MUS 121 - Principles of Singing I Credits: 2
- MUS 210 - Applied Music Lessons Credits: 2
- MUY 111 - Elementary Harmony I Credits: 2
- MUY 113 - Elementary Sight Singing and Ear Training I Credits: 2
- General Education Requirement Credits: 3

### First Year - Second Semester

- MUP 206 - Piano Class II Credits: 1
- MUO XXX Ensemble(s) Credits: 1
- MUS 100 - Recital Laboratory Credits: 0
- MUS 122 - Principles of Singing II Credits: 2
- MUS 210 - Applied Music Lessons Credits: 2
- MUY 112 - Elementary Harmony II Credits: 2
- MUY 114 - Elementary Sight Singing and Ear Training II Credits: 2
- General Education Requirement Credits: 9

### Second Year - First Semester

- EHD 202 - Education in a Multicultural Society Credits: 3
- MUE 210 - Introduction to Music Education Credits: 3
- MUH 201 - History of Western Music I Credits: 2
- MUO XXX Ensemble(s) Credits: 1
- MUP 215 - Piano Class I Credits: 1
- MUS 100 - Recital Laboratory Credits: 0
- MUS 210 - Applied Music Lessons Credits: 2

- MUY 211 - Advanced Harmony I Credits: 2
- MUY 213 - Advanced Sight Singing and Ear Training I Credits: 2
- General Education Requirement Credits: 3

## Second Year - Second Semester

- EHD 203 - Educational Psychology Credits: 3
- MUH 202 - History of Western Music II Credits: 2
- MUO XXX Ensemble(s) Credits: 1
- MUP 216 - Piano Class II Credits: 1
- MUS 100 - Recital Laboratory Credits: 0
- MUS 210 - Applied Music Lessons Credits: 2
- MUY 212 - Advanced Harmony II Credits: 2
- MUY 214 - Advanced Sight Singing and Ear Training II Credits: 2

## Third Year - First Semester

- MUE 209 - String Class Credits: 2  
or
- MUE 213 - Woodwinds I Credits: 1  
and
- MUE 214 - Woodwinds II Credits: 1  
or
- MUE 217 - Brass Class Credits: 2  
or
- MUE 222 - Percussion Class Credits: 2
- MUE 320 - Teaching of General Music: Elementary Credits: 3
- MUO XXX Ensemble(s) Credits: 1
- MUP 340 - Basic Conducting Credits: 2
- MUS 100 - Recital Laboratory Credits: 0
- MUS 350 - Applied Music Lessons Credits: 2
- MUY XXX Music Theory Credits: 2-3
- SED 302 - Adapting Instruction for Students with Disabilities Credits: 3
- General Education Requirement Credits: 3

## Third Year - Second Semester

- MUE 321 - Teaching of General Music: Secondary Credits: 3
- MUP 341 - Choral Conducting and Literature Credits: 3
- MUP 405 - Keyboard Musicianship Credits: 2
- MUS 100 - Recital Laboratory Credits: 0
- MUS 350 - Applied Music Lessons Credits: 2
- MUY 452 - Orchestration Credits: 3
- General Education Requirement Credits: 3

## Fourth Year - First Semester

- MUE 400 - Choral Music Education Credits: 3
- General Education Requirement Credits: 6
- MUS elective Credits: 8
- MUO XXX Ensemble(s) Credits: 1-2

## Fourth Year - Second Semester

- EHD 494 - Student Teaching K-12 (Art or Music) Credits: 1 - 12

# Music Performance

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0.

**Minimum Grade requirements for courses to count toward major:** A "C-" or better is required in all music courses required for the major, including electives taken to meet the music requirements. Any student who receives a semester grade lower than "C-" for applied lessons is automatically dropped from the program and must re-audition for re-admission.

**Other GPA requirements to graduate:** A minimum accumulative GPA of 2.0 ("C") in the major.

**Required Course(s) for fulfilling Capstone Experience:** Full hour recital required in Senior year.

**Contact Information:** Beth Wiemann, Chair, Class of 1944 Hall, 581-1244

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 45 minute recital is required in the junior year. A full hour recital, fulfilling the capstone requirement, is required in the senior year.

The requirements listed on this page are specific to this particular major. Students are also responsible for meeting any graduation requirements set out by their college. Students in the College of Liberal Arts and Sciences (CLAS) should make sure to review those requirements as stated on the College of Liberal Arts & Sciences page of the catalog.

## Music Theory:

- Elementary Harmony, Sight Singing and Ear Training (MUY 111, 112, 113, 114) Credits: 8
- Advanced Harmony, Sight Singing and Ear Training (MUY 211, 212, 213, 214) Credits: 8
- Music Theory Electives selected from MUY 300 and above courses Credits: 5-6

## Music History:

- Survey of Music Literature (MUL 200, 202) Credits: 4
- History of Music (MUH 201, 202) Credits: 6
- Music History electives selected from: Credits: 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 Ensemble Requirements:

- Four credits in a large ensemble, performing in your major instrument (Piano and guitar majors may choose 8 credits in small ensembles)
- Four credits in a small ensemble (major instrument or voice)
- 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 Students:

- MUP 251 - Collaborative Piano Credits: 1
- MUS 312 - Piano Pedagogy Credits: 1
- MUS 316 - Piano Literature I Credits: 1
- MUS 318 - Piano Literature II Credits: 1

## Voice Students:

- MUS 310 - Voice Pedagogy/Literature Credits: 1-2
- THE 402 - Movement Training for Actors Credits: 3
- THE or DAN Electives Credits: 6

## Basic Conducting (all majors):

- MUP 340 - Basic Conducting Credits: 2



## Electives:

Electives should be chosen to meet General Education requirements. ARH 155 and courses in the Theatre/Dance division are recommended, and one year of foreign language is required for voice majors.

## Required Courses in Suggested Sequence for the BM Degree in Performance - Instrumental

### First Year - First Semester

- MUL 202 - The Art of Listening to Music: Historical Survey Credits: 3
- MUS 100 - Recital Laboratory Credits: 0
- MUS 210 - Applied Music Lessons Credits: 2
- MUY 111 - Elementary Harmony I Credits: 2
- MUY 113 - Elementary Sight Singing and Ear Training I Credits: 2
- MUO XXX Ensemble(s) Credits: 1
- General Education Requirement Credits: 3
- General Elective Credits: 3

### First Year - Second Semester

- MUL 200 - Music Literature Laboratory Credits: 1
- MUS 100 - Recital Laboratory Credits: 0
- MUS 210 - Applied Music Lessons Credits: 2
- MUY 112 - Elementary Harmony II Credits: 2
- MUY 114 - Elementary Sight Singing and Ear Training II Credits: 2
- MUO XXX Ensemble(s) Credits: 1
- General Education Requirement Credits: 3

### Second Year - First Semester

- MUH 201 - History of Western Music I Credits: 2
- MUS 100 - Recital Laboratory Credits: 0
- MUS 210 - Applied Music Lessons Credits: 2
- MUY 211 - Advanced Harmony I Credits: 2
- MUY 213 - Advanced Sight Singing and Ear Training I Credits: 2
- MUO XXX Ensemble(s) Credits: 1
- Language Credits: 4
- General Education Requirement Credits: 3

## Second Year - Second Semester

- MUH 202 - History of Western Music II Credits: 2
- MUS 100 - Recital Laboratory Credits: 0
- MUS 210 - Applied Music Lessons Credits: 2
- MUY 212 - Advanced Harmony II Credits: 2
- MUY 214 - Advanced Sight Singing and Ear Training II Credits: 2
- MUO XXX Ensemble(s) Credits: 1
- Language Credits: 4
- General Education Requirement Credits: 3

## Third Year - First Semester

- MUP 340 - Basic Conducting Credits: 2
- MUS 100 - Recital Laboratory Credits: 0
- MUS 450 - Applied Music Lessons Credits: 4
- MUY 3XX or 4XX Credits: 2-3
- MUO XXX Ensemble(s) Credits: 1
- General Education Requirement Credits: 4
- Music History Elective Credits: 3

## Third Year - Second Semester

- MUS 100 - Recital Laboratory Credits: 0
- MUS 450 - Applied Music Lessons Credits: 4
- General Education Requirement Credits: 4
- MUO XXX Ensemble(s) Credits: 1
- MUY 3XX or 4XX Credits: 3
- Music History Elective Credits: 3
- General Elective Credits: 3

## Fourth Year - First Semester

- MUS 100 - Recital Laboratory Credits: 0
- MUS 450 - Applied Music Lessons Credits: 4
- MUO XXX Ensemble(s) Credits: 1
- General Education Requirement Credits: 7
- General Elective Credits: 3

## Fourth Year - Second Semester

- MUS 100 - Recital Laboratory Credits: 0

- MUS 450 - Applied Music Lessons Credits: 4
- MUO XXX Ensemble(s) Credits: 1
- General Education Requirements Credits: 7
- General Elective Credits: 3

## Required Courses in Suggested Sequence for the BM Degree in Performance - Piano

### First Year - First Semester

- MUL 202 - The Art of Listening to Music: Historical Survey Credits: 3
- MUS 100 - Recital Laboratory Credits: 0
- MUS 210 - Applied Music Lessons Credits: 2
- MUS 316 - Piano Literature I Credits: 1
- MUY 111 - Elementary Harmony I Credits: 2
- MUY 113 - Elementary Sight Singing and Ear Training I Credits: 2
- General Education Requirement Credits: 3
- MUO XXX Ensemble(s) Credits: 1

### First Year - Second Semester

- MUL 200 - Music Literature Laboratory Credits: 1
- MUS 100 - Recital Laboratory Credits: 0
- MUS 210 - Applied Music Lessons Credits: 2
- MUS 318 - Piano Literature II Credits: 1
- MUY 112 - Elementary Harmony II Credits: 2
- MUY 114 - Elementary Sight Singing and Ear Training II Credits: 2
- MUO XXX Ensemble(s) Credits: 1
- General Education Requirement Credits: 3
- Elective Credits: 3

### Second Year - First Semester

- MUH 201 - History of Western Music I Credits: 2
- MUP 251 - Collaborative Piano Credits: 1
- MUS 100 - Recital Laboratory Credits: 0
- MUS 210 - Applied Music Lessons Credits: 2
- MUY 211 - Advanced Harmony I Credits: 2
- MUY 213 - Advanced Sight Singing and Ear Training I Credits: 2
- MUO XXX Ensemble(s) Credits: 1
- General Education Requirement - Quantitative or Science Credits: 4

## Second Year - Second Semester

- MUH 202 - History of Western Music II Credits: 2
- MUP 252 - Accompanying II Credits: 1
- MUS 100 - Recital Laboratory Credits: 0
- MUS 210 - Applied Music Lessons Credits: 2
- MUY 212 - Advanced Harmony II Credits: 2
- MUY 214 - Advanced Sight Singing and Ear Training II Credits: 2
- MUO XXX Ensemble(s) Credits: 1
- General Education Requirement Credits: 3-4

## Third Year - First Semester

- MUP 340 - Basic Conducting Credits: 2
- MUS 100 - Recital Laboratory Credits: 0
- MUS 312 - Piano Pedagogy Credits: 1
- MUS 450 - Applied Music Lessons Credits: 4
- MUO XXX Ensemble(s) Credits: 1
- MUY 3XX or 4XX Credits: 2-3
- Music History Elective Credits: 3
- General Education Requirement Credits: 3

## Third Year - Second Semester

- MUS 100 - Recital Laboratory Credits: 0
- MUS 450 - Applied Music Lessons Credits: 4
- MUO XXX Ensemble(s) Credits: 1
- MUY 3XX or 4XX Credits: 3
- Music History Elective Credits: 3
- General Education Requirement Credits: 3

## Fourth Year - First Semester

- MUS 100 - Recital Laboratory Credits: 0
- MUS 450 - Applied Music Lessons Credits: 4
- MUO XXX Ensemble(s) Credits: 1
- General Education Requirement Credits: 3-4
- General Education Requirement Credits: 6

## Fourth Year - Second Semester

- MUS 100 - Recital Laboratory Credits: 0

- MUS 450 - Applied Music Lessons Credits: 4
- MUO XXX Ensemble(s) Credits: 1
- General Education Requirement Credits: 9

## Required Courses in Suggested Sequence for the BM Degree in Performance - Vocal

### First Year - First Semester

- MUL 202 - The Art of Listening to Music: Historical Survey Credits: 3
- MUS 100 - Recital Laboratory Credits: 0
- MUS 121 - Principles of Singing I Credits: 2
- MUS 210 - Applied Music Lessons Credits: 2
- MUY 111 - Elementary Harmony I Credits: 2
- MUY 113 - Elementary Sight Singing and Ear Training I Credits: 2
- MUO XXX Ensemble(s) Credits: 1
- General Education Requirement Credits: 3

### First Year - Second Semester

- MUL 200 - Music Literature Laboratory Credits: 1
- MUS 100 - Recital Laboratory Credits: 0
- MUS 122 - Principles of Singing II Credits: 2
- MUS 210 - Applied Music Lessons Credits: 2
- MUY 112 - Elementary Harmony II Credits: 2
- MUY 114 - Elementary Sight Singing and Ear Training II Credits: 2
- MUO XXX Ensemble(s) Credits: 1
- THE XXX or DAN XXX Credits: 2-3

### Second Year - First Semester

- MUH 201 - History of Western Music I Credits: 2
- MUS 100 - Recital Laboratory Credits: 0
- MUS 210 - Applied Music Lessons Credits: 2
- MUY 211 - Advanced Harmony I Credits: 2
- MUY 213 - Advanced Sight Singing and Ear Training I Credits: 2
- MUO XXX Ensemble(s) Credits: 1
- General Education Requirement Credits: 3
- Foreign Language Credits: 4

### Second Year - Second Semester

- MUH 202 - History of Western Music II Credits: 2
- MUS 100 - Recital Laboratory Credits: 0
- MUS 210 - Applied Music Lessons Credits: 2
- MUY 212 - Advanced Harmony II Credits: 2
- MUY 214 - Advanced Sight Singing and Ear Training II Credits: 2
- THE 402 - Movement Training for Actors Credits: 3
- MUO XXX Ensemble(s) Credits: 1
- General Education Requirement - Quantitative or Science Credits: 3-4
- Foreign Language Credits: 4

### Third Year - First Semester

- MUP 340 - Basic Conducting Credits: 2
- MUS 100 - Recital Laboratory Credits: 0
- MUS 450 - Applied Music Lessons Credits: 4
- MUO XXX Ensemble(s) Credits: 1
- MUY 3XX or 4XX Credits: 2-3
- Music History Elective Credits: 3
- General Education Requirement Credits: 3

### Third Year - Second Semester

- MUS 100 - Recital Laboratory Credits: 0
- MUS 450 - Applied Music Lessons Credits: 4
- MUO Ensemble(s) Credits: 1
- MUY 3XX or 4XX Credits: 3
- THE XXX or DAN XXX Credits: 2-3
- Music History Elective Credits: 3
- General Education Requirement Credits: 3

### Fourth Year - First Semester

- MUS 100 - Recital Laboratory Credits: 0
- MUS 310 - Voice Pedagogy/Literature Credits: 1-2
- MUS 450 - Applied Music Lessons Credits: 4
- MUO XXX Ensemble(s) Credits: 1
- General Education Requirement Credits: 6

### Fourth Year - Second Semester

- MUS 100 - Recital Laboratory Credits: 0
- MUS 450 - Applied Music Lessons Credits: 4
- MUO XXX Ensemble(s) Credits: 1

- THE XXX or DAN XXX Credits: 2-3
- General Education Requirement Credits: 9

## New Media

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** New Media majors must have a "C-" or better in each required major course taken.

**Other GPA requirements to graduate:** A minimum accumulative GPA of 2.0 ("C") in the major.

**Required Course(s) for fulfilling Capstone Experience:** NMD 498 and NMD 499

**Contact Information:** Margaret Lukens, Chair of New Media Department, 5713 Chadbourne Hall, (207) 581-4433

The New Media Department offers an interdisciplinary course of study in how advances in expressive technologies and networked communication are changing the ways we relate to each other and to the world around us. The curriculum's melding of critical perspective with hands-on practice enables students to become articulate and creative thinkers who are proficient with a range of technologies, able to address problems and opportunities at the horizon of human experience.

UMaine New Media is taught by a core faculty with expertise in art, design, computer science, engineering, cultural studies, and creative writing. Cooperating professors from fine art, computer science, music, psychology, and journalism add further dimensions to the Department's offerings.

All pre-portfolio majors share a common experience studying applied process and theory in New Media foundation courses as well as in other related disciplines. This three-semester experience is capped off by a portfolio review conducted by the program faculty. In subsequent years, majors focus on three of the following five areas of concentration:

- Digital Reporting and Documentary Production - content-based media production and dissemination using cameras and recorders.
- Information and Interaction Design - the intersection of information design, interaction design and sensorial design in development and creation of user experiences.
- Digital Narrative and Hypertext - the analysis, design and production of digital narrative, storytelling and performance.
- Time-Based Art and Design - creative expression in mediums such as installation, digital cinema, animation, audio, enhanced environments, and real-time performance.
- Networks and Creativity- harnessing the Internet to build, share, and preserve digital culture, from Web design to emulation.

In the spring semesters, students are brought together in Project Design Workshops that integrate knowledge from the various concentrations and explore the collaborative process. A two-part, six-credit senior capstone experience completes the BA. Here, students design and produce advanced New Media projects that incorporate such media as innovative Web projects; experimental forms of animated, feature or documentary video; social, cultural and creative networks; and interactive games.

New Media majors are encouraged to apply new media strategies and techniques to other fields, including their Minor. New Media students also may apply to work in the New Media and Internet Technologies Lab (commonly known as ASAP). 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 required to have a personal laptop 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 48 credit hours in New Media courses. A "C-" or better is required in all courses that satisfy New Media major program requirements. ENG 317 (Business and Technical Writing) or equivalent is a required course outside the major.

The requirements listed on this page are specific to this particular major. Students are also responsible for meeting any graduation requirements set out by their college. Students in the College of Liberal Arts and Sciences (CLAS) should make sure to review those requirements as stated on the College of Liberal Arts & Sciences page of the catalog.

## **Pre-Portfolio Core Requirements**

Prior to continuing as a fourth-semester New Media Major, students must complete the following classes and submit an approved portfolio.

- NMD 100 - Introduction to New Media Credits: 3
- NMD 102 - Introduction to New Media Technologies, Interaction Design and Prototyping Credits: 3
- NMD 104 - Design Basics for New Media Credits: 3
- NMD 200 - New Media Strategies Credits: 3

One of the following courses is required:

- NMD 150 - Script Your World Credits: 3  
**or**
- NMD 160 - Creative Programming Credits: 3  
**or**
- COS 125 - Introduction to Problem Solving Using Computer Programming Credits: 3  
**or**
- COS 220 - Introduction to C++ Programming Credits: 3

## **Project-Based Requirements:**

Students must take all of the following classes:

- NMD 206 - Project Design Workshop I Credits: 3
- NMD 306 - Project Design Workshop II Credits: 3
- NMD 498 - Practicum in New Media I Credits: 3
- NMD 499 - Practicum in New Media II Credits: 3

## **Sequence Requirements**

Students must take a minimum of three 300-level and two 400-level classes from the following list:



Choose 3 of the following (for 9 total credits)

- NMD 341 - Photographic Reporting and Storytelling Credits: 3
- NMD 342 - Interaction Design and Physical Computing Credits: 3
- NMD 343 - Digital Narrative Workshop I Credits: 3
- NMD 344 - Time-Based Art and Design I Credits: 3
- NMD 345 - Networks and Creativity I Credits: 3

Choose 2 of the following (for 6 total credits):

- NMD 441 - Documentary Photography and Audio Credits: 3
- NMD 442 - User Experience Design Credits: 3
- NMD 443 - Digital Narrative Workshop II Credits: 3
- NMD 444 - Time-Based Art and Design II Credits: 3
- NMD 445 - Networks and Creativity II Credits: 3

## New Media Elective Requirements:

Students must complete 2 courses (6 credits) that satisfy the New Media Electives requirement. Following is a partial list.

- NMD 250 - Electronic Music Composition I: Item and Arrangement Credits: 3
- NMD 251 - Electronic Music Composition II: Composing a Process Credits: 3
- NMD 270 - Digital Art I Credits: 3
- NMD 295 - Topics in New Media Credits: 1-3
- NMD 324 - Year in Film I Credits: 3
- NMD 370 - Digital Art IIA: 3D Modeling and Animation Credits: 3
- NMD 398 - Topics in New Media Credits: 1-3
- NMD 424 - Year in Film II Credits: 3
- NMD 430 - Topics in New Media Credits: 1-3
- NMD 490 - Independent Study in New Media Credits: 3

## Philosophy

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** A grade of C- or better is required in any Philosophy courses counting towards major.

**Other GPA requirements to graduate:** A minimum accumulative GPA of 2.0 ("C") in the major.

**Required Course(s) for fulfilling Capstone Experience:** PHI 475

**Contact Information:** Roger J.H. King, Chair, Department of Philosophy, Room 4, The Maples. Phone # 581-3862.

The Department of Philosophy offers a program of study leading to a B.A. in philosophy in the College of Liberal Arts and Sciences. The major offers students a diverse set of courses, representing the full spectrum of philosophical inquiry. Philosophy is a discipline devoted to rigorous reflection on human nature, culture, and the world. It has a long history, beginning with the Ancient Greeks, that is the foundation of philosophical education. Areas covered in the curriculum include environmental and medical ethics, ethical theory, existentialism, social and political philosophy, logic, phenomenology, feminist philosophy, Hinduism and Buddhism, philosophy of language, aesthetics, philosophy of science, and the history of philosophy. The curriculum is organized so that advanced courses will prepare those students who wish to continue studying philosophy in graduate school.

Philosophy is also a well-respected gateway major for students interested in careers in law, business, government, or education. The Department teaches courses in bio-medical ethics, business ethics, and environmental ethics that investigate ethical problems relevant to many professional fields of study and work. In addition to its major, the Department of Philosophy offers two minors: a Minor in Philosophy, and a Minor in Ethics, and Social and Political Philosophy.

Faculty members in the Department of Philosophy are recognized scholars who contribute actively to the professional advancement of philosophical inquiry and innovation both nationally and internationally.

The Department welcomes double majors and minors from other fields. For those students who have theoretical interests and/or a concern with ethical and political issues related to their main discipline, philosophy can be an excellent addition to the major field of study.

The requirements listed on this page are specific to this particular major. Students are also responsible for meeting any graduation requirements set out by their college. Students in the College of Liberal Arts and Sciences (CLAS) should make sure to review those requirements as stated on the College of Liberal Arts & Sciences page of the catalog.

## Requirements: a minimum of 30 credit hours in philosophy

At least 21 credit hours (7 courses) in philosophy must be upper level courses, i.e., courses above the 100 level.

### **Three credit hours in Ethics:**

- PHI 230 - Ethics Credits: 3
- or
- PHI 240 - Social and Political Philosophy Credits: 3
- or
- PHI 344 - Theories of Justice Credits: 3

### **Three credit hours in logic:**

- PHI 103 - Methods of Reasoning Credits: 3
- or
- PHI 250 - Formal Logic Credits: 3

### **Nine hours in the History of Philosophy including:**

- PHI 210 - History of Ancient Philosophy Credits: 3

- PHI 312 - History of Modern Philosophy Credits: 3  
and one of the following:
- PHI 212 - Hegel and 19th Century Philosophy Credits: 3
- PHI 214 - 20th Century Continental Philosophy Credits: 3
- PHI 286 - Religions and Philosophies of the East: Hinduism Credits: 3
- PHI 287 - Religions and Philosophies of the East: Buddhism Credits: 3
- PHI 317 - Existentialism and Phenomenology Credits: 3
- PHI 342 - Marxist Philosophy I: The Philosophy of Karl Marx Credits: 3
- PHI 346 - The Philosophy of Mahatma Gandhi Credits: 3
- PHI 420 - Topics in Recent Continental Philosophy Credits: 3
  
- PHI 475 - Junior/Senior Philosophy Seminar Credits: 3
- Completion of the College of Liberal Arts and Sciences requirement for the B.A. degree (for students admitted for Fall 2011 and after); a minor outside the field of your major, or a double major. For students admitted prior to Fall 2011 the old B.A. requirements remain in force unless you choose to adopt the new B.A. requirement of a minor outside your major field or double major. If you have questions, please consult your advisor.
- Completion of University General Education requirements.

## First Year

Two philosophy courses without prerequisites at the 100- or 200-level.

## Second Year

- PHI 210 - History of Ancient Philosophy Credits: 3
- PHI 312 - History of Modern Philosophy Credits: 3

## Third Year

Two or three upper level philosophy courses, possibly including:

- PHI 230 - Ethics Credits: 3  
**or**
- PHI 240 - Social and Political Philosophy Credits: 3  
**or**
- PHI 344 - Theories of Justice Credits: 3  
**or**
- PHI 475 - Junior/Senior Philosophy Seminar Credits: 3

## Fourth Year

Two or three upper level philosophy courses, including PHI 475 (if not taken in Junior Year)

## List of Philosophy Courses

- PHI 100 - Contemporary Moral Problems Credits: 3
- PHI 102 - Introduction to Philosophy Credits: 3
- PHI 103 - Methods of Reasoning Credits: 3
- PHI 104 - Existentialism and Literature Credits: 3
- PHI 105 - Introduction to Religious Studies Credits: 3
- PHI 210 - History of Ancient Philosophy Credits: 3
- PHI 212 - Hegel and 19th Century Philosophy Credits: 3
- PHI 214 - 20th Century Continental Philosophy Credits: 3
- PHI 223 - Modern Jewish Thought Credits: 3
- PHI 230 - Ethics Credits: 3
- PHI 231 - Topics in Applied Ethics Credits: 3
- PHI 232 - Environmental Ethics Credits: 3
- PHI 233 - Business Ethics Credits: 3
- PHI 235 - Biomedical Ethics Credits: 3
- PHI 236 - Feminist Ethical, Social and Political Theory Credits: 3
- PHI 240 - Social and Political Philosophy Credits: 3
- PHI 244 - Philosophy of Law Credits: 3
- PHI 250 - Formal Logic Credits: 3
- PHI 260 - Philosophy of Language Credits: 3
- PHI 262 - Philosophy of Art Credits: 3
- PHI 286 - Religions and Philosophies of the East: Hinduism Credits: 3
- PHI 287 - Religions and Philosophies of the East: Buddhism Credits: 3
- PHI 312 - History of Modern Philosophy Credits: 3
- PHI 317 - Existentialism and Phenomenology Credits: 3
- PHI 342 - Marxist Philosophy I: The Philosophy of Karl Marx Credits: 3
- PHI 344 - Theories of Justice Credits: 3
- PHI 345 - Global Justice Credits: 3
- PHI 346 - The Philosophy of Mahatma Gandhi Credits: 3
- PHI 351 - Topics in Philosophy and Literature Credits: 3
- PHI 353 - Philosophy of Mind Credits: 3
- PHI 364 - Views of Self: East and West Credits: 3
- PHI 382 - Theories of Myth Credits: 3
- PHI 420 - Topics in Recent Continental Philosophy Credits: 3
- PHI 431 - Advanced Topics in the Philosophy of Art Credits: 3
- PHI 432 - Environmental Philosophy and Policy Credits: 3
- PHI 465 - Advanced Topics in Philosophy Credits: 3
- PHI 466 - Readings in Philosophy Credits: 1-3
- PHI 475 - Junior/Senior Philosophy Seminar Credits: 3
- PHI 566 See Graduate Catalog for list of Graduate Level courses

## Physics

**OVERVIEW OF DEGREE REQUIREMENTS - Bachelor of Arts in Physics**

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** None.

**Other GPA requirements to graduate:** A minimum accumulative GPA of 2.0 ("C") in the major.

**Required Course(s) for fulfilling Capstone Experience:** PHY 400 and PHY 481 or PHY 400 and PHY 482

**Contact Information:** Michael Wittmann, Chair of Department of Physics and Astronomy, 120 Bennett Hall, (207) 581-1015.

### **OVERVIEW OF DEGREE REQUIREMENTS - Bachelor of Science in Physics**

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** A minimum accumulative GPA of 2.0 ("C") in the major.

**Other GPA requirements to graduate:** None.

**Required Course(s) for fulfilling Capstone Experience:** PHY 400 and PHY 481 or PHY 400 and PHY 482

**Contact Information:** Michael Wittmann, Chair of Department of Physics and Astronomy, 120 Bennett Hall, (207) 581-1015

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 B.S. degree places a strong emphasis on physics and mathematics. The BS degree is the recommended program for students planning further study of physics in graduate school or who desire a more in-depth physics experience. The B.A. 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 requirements listed on this page are specific to this particular major. Students are also responsible for meeting any graduation requirements set out by their college. Students in the College of Liberal Arts and Sciences (CLAS) should make sure to review those requirements as stated on the College of Liberal Arts & Sciences page of the catalog.

## 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 101 and 15 credits in mathematics. The 35 credits in physics (above PHY 100) must include PHY 121 and PHY 122 (or PHY 111 and PHY 112), PHY 200, PHY 223, PHY 229, PHY 230, PHY 236, PHY 238, PHY 441 and/or PHY 442, PHY 454, and PHY 476 and PHY 481. It must also include at least one 400-level course 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 PHY 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, and six credits of approved science, engineering or mathematics electives. A minimum of 72 credits must be outside the major.

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.

## Required Courses in a Suggested Sequence for the B.A. in Physics

### First Year - First Semester

- ENG 101 - College Composition Credits: 3
- MAT 126 - Calculus I Credits: 4
- PHY 100 - Introduction to Physics and Astronomy Credits: 1
- PHY 121 - Physics for Engineers and Physical Scientists I Credits: 4  
(See Footnote 1)
- Human Values/Social Context and Ethics Elective I Credits: 3

### First Year - Second Semester

- MAT 127 - Calculus II Credits: 4
- PHY 122 - Physics for Engineers and Physical Scientists II Credits: 4
- Human Values/Social Context and Ethics Elective II Credits: 3
- Elective Credits: 3

### Second Year - First Semester

- CHY 121 - Introduction to Chemistry Credits: 3
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- MAT 228 - Calculus III Credits: 4

- PHY 229 - Physical Measurements Laboratory I Credits: 2
- PHY 236 - Introductory Quantum Physics Credits: 3
- Human Values/Social Context and Ethics Elective III Credits: 3

## Second Year - Second Semester

- MAT 259 - Differential Equations Credits: 3
- PHY 200 - Career Preparation in Physics and Engineering Physics I Credits: 1
- PHY 223 - Special Relativity Credits: 1
- PHY 230 - Physical Measurements Laboratory II Credits: 2
- PHY 238 - Mechanics Credits: 3
- Elective Credits: 3
- Human Values/Social Context and Ethics Elective IV Credits: 3

## Third Year - First Semester

- PHY 441 - Physical Electronics Laboratory Credits: 2
- PHY 454 - Electricity and Magnetism I Credits: 3
- PHY 476 - Mathematical Methods in Physics Credits: 3
- Human Values/Social Context and Ethics Elective V Credits: 3
- Elective Credits: 3

## Third Year - Second Semester

- PHY 442 - Modern Experimental Physics Credits: 2
- Physics Elective Credits: 3
- Human Value/Social Context and Ethics Elective VI Credits: 3
- Elective Credits: 6

## Fourth Year - First Semester

- PHY 400 - Career Preparation in Physics and Engineering Physics II Credits: 1
- PHY 481 - Project Laboratory in Physics I Credits: 3
- Electives Credits: 12

## Fourth Year - Second Semester

- Electives Credits: 15

<sup>1</sup> With the approval of the Chair of the Department of Physics and Astronomy and in consultation with the student's academic advisor, students may substitute PHY 111/112, for PHY 121/122.

# The Bachelor of Science in Physics

## Requirements:

The B.S. degree requires a minimum of 52 credits of physics (9 of which are elective) above PHY 100, 18 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 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 is usually chosen from MAT 262, MAT 332, MAT 434, MAT 452, MAT 453, MAT 454, or MAT 471. PHY 574 may be used here as the math elective, 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, PHY 496, PHY 501, or PHY 574.

The following course schedule represents the suggested curriculum for a typical student in the Bachelor's of Science in Physics program. Courses listed by number and name are required for the B.S. degree. Substitutions may be made for some courses on approval of the student's advisor and of the Chairperson of the Department of Physics and Astronomy. First-semester, first-year students must also take PHY 100.

## Required Courses in a Suggested Sequence for the B.S. in Physics

### First Year - First Semester

- ENG 101 - College Composition Credits: 3
- MAT 126 - Calculus I Credits: 4
- PHY 100 - Introduction to Physics and Astronomy Credits: 1
- PHY 121 - Physics for Engineers and Physical Scientists I Credits: 4
- Human Values/Social Context and Ethics Elective I Credits: 3

### First Year - Second Semester

- COS 125 - Introduction to Problem Solving Using Computer Programming Credits: 3  
or
- COS 220 - Introduction to C++ Programming Credits: 3
- MAT 127 - Calculus II Credits: 4
- PHY 122 - Physics for Engineers and Physical Scientists II Credits: 4
- Human Values/Social Context and Ethics Elective II Credits: 3

### Second Year - First Semester

- CHY 121 - Introduction to Chemistry Credits: 3
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- MAT 228 - Calculus III Credits: 4
- PHY 229 - Physical Measurements Laboratory I Credits: 2
- PHY 236 - Introductory Quantum Physics Credits: 3
- Human Values/Social Context and Ethics Elective III Credits: 3



## Second Year - Second Semester

- MAT 259 - Differential Equations Credits: 3
- PHY 200 - Career Preparation in Physics and Engineering Physics I Credits: 1
- PHY 223 - Special Relativity Credits: 1
- PHY 230 - Physical Measurements Laboratory II Credits: 2
- PHY 238 - Mechanics Credits: 3
- Human Values/Social Context and Ethics Elective IV Credits: 3
- Science Elective 1 Credits: 3

## Third Year - First Semester

- PHY 441 - Physical Electronics Laboratory Credits: 2
- PHY 454 - Electricity and Magnetism I Credits: 3
- PHY 476 - Mathematical Methods in Physics Credits: 3
- Mathematics Elective Credits: 3
- Human Values/Social Context and Ethics Elective V Credits: 3

## Third Year - Second Semester

- PHY 442 - Modern Experimental Physics Credits: 2
- PHY 455 - Electricity and Magnetism II Credits: 3
- Human Values/Social Context and Ethics Elective VI Credits: 3
- Elective Credits: 3
- Physics Elective I Credits: 3

## Fourth Year - First Semester

- PHY 400 - Career Preparation in Physics and Engineering Physics II Credits: 1
- PHY 469 - Quantum and Atomic Physics Credits: 3
- PHY 481 - Project Laboratory in Physics I Credits: 3
- Electives Credits: 6
- Physics Elective II Credits: 3

## Fourth Year - Second Semester

- PHY 463 - Statistical Mechanics Credits: 3
- Electives Credits: 9
- Physics Elective III Credits: 3

<sup>1</sup>Approved science elective must be from a discipline other than AST, COS, MAT or PHY

# Political Science

## OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** A "C" or better is required in all Political Science (POS) courses counting towards the major.

**Other GPA requirements to graduate:** A minimum accumulative GPA of 2.0 ("C") in the major.

**Required Course(s) for fulfilling Capstone Experience:** POS 499

**Contact Information:** Mark D. Brewer, Professor and Interim Chair, 113A North Stevens Hall, (207) 581-1871, mark.brewer@umit.maine.edu

Political Science examines the nature of politics from diverse perspectives. The requirements for majors in the department teach students to think critically about the 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.

### 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 cr.)
  - International Relations (6 cr.)
  - Comparative Politics (6 cr.)
  - Political Theory (6 cr.)
  - POS Electives (POS 100 may be used as an elective) (12 cr.)
- Students must have a minimum of 72 hours outside their major

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.

- A minimum of 18 of the 36 POS credits required must be completed at the University of Maine.

The requirements listed on this page are specific to this particular major. Students are also responsible for meeting any graduation requirements set out by their college. Students in the College of Liberal Arts and Sciences (CLAS) should make sure to review those requirements as stated on the College of Liberal Arts & Sciences page of the catalog.

### 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 Credits: 3
- POS 282 - Introduction to American Law Credits: 3
- POS 306 - Crafting the American Constitution Credits: 3  
(POS 306 may be used as an American Politics OR a Political Theory course)
- POS 348 - The Politics of Sport in America Credits: 3
- POS 352 - American Public Opinion Credits: 3
- POS 353 - The U.S. Congress Credits: 3
- POS 354 - The U.S. Presidency Credits: 3
- POS 355 - Music and Politics in the American Context Credits: 3  
(POS 355 may be used as an American Politics OR a Political Theory Course)
- POS 357 - Film and Politics Credits: 3
- POS 359 - Topics in American Government Credits: 3
- POS 362 - Maine Government Credits: 3
- POS 363 - Urban Government and Politics Credits: 3
- POS 487 - SL: Practicum in Engaged Policy Studies I Credits: 3
- POS 488 - Practicum in Engaged Policy Studies II Credits: 3
- POS 380 - Interest Groups and American Politics Credits: 3
- POS 381 - Political Parties and Elections Credits: 3
- POS 383 - American Constitutional Law Credits: 3
- POS 384 - American Civil Liberties Credits: 3
- POS 385 - Women and Politics Credits: 3
- POS 386 - Religion and Politics in the United States Credits: 3
- POS 453 - Political Behavior and Participation Credits: 3
- POS 484 - The American Constitution and Criminal Due Process Credits: 3
- POS 486 - Religious Thought, the American Identity, and U.S. Public Policy Credits: 3  
(POS 486 may be used as an American Politics OR a Political Theory Course)

## 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 Credits: 3
- POS 120 - Introduction to World Politics Credits: 3
- POS 273 - International Relations Credits: 3
- POS 368 - China Credits: 3  
(POS 368 may be used as an International Relations OR a Comparative Politics course)
- POS 369 - Topics in International Relations Credits:
- POS 370 - International Terrorism: The Challenges for America Credits: 3
- POS 372 - Canadian Foreign Policy Credits: 3
- POS 374 - American Foreign Policy Credits: 3
- POS 375 - United States and the Middle East Credits: 3
- POS 469 - Politics of the Middle East Credits: 3
- POS 470 - International Law Credits: 3
- POS 474 - Conduct of Foreign Policy Credits: 3

- POS 475 - International Security Credits: 3
- POS 476 - Seminar in World Politics Credits: 3

## Comparative Politics:

- POS 241 - Introduction to Comparative Politics Credits: 3
- POS 243 - Canadian Government and Politics Credits: 3
- POS 335 - Major Governments of Western Europe Credits: 3
- POS 336 - Government and Politics in Russia Credits: 3
- POS 337 - Government and Politics in Eurasia Credits: 3
- POS 344 - Public Policy in Canada Credits: 3
- POS 349 - Topics in Comparative Politics Credits: 3
- POS 368 - China Credits: 3  
(POS 368 may be used as an International Relations OR a Comparative Politics course)
- POS 467 - African Politics Credits: 3

## Political Theory:

- POS 201 - Introduction to Political Theory Credits: 3
- POS 301 - Classical Political Thought Credits: 3
- POS 302 - Medieval Political Thought Credits: 3
- POS 303 - Early Modern Political Thought Credits: 3
- POS 304 - American Political Thought Credits: 3
- POS 305 - Late Modern Political Thought Credits: 3
- POS 306 - Crafting the American Constitution Credits: 3  
(POS 306 may be used as an American Politics OR a Political Theory course)
- POS 307 - Democratic Theory Credits: 3
- POS 309 - Topics in Political Theory Credits: 3
- POS 355 - Music and Politics in the American Context Credits: 3  
(POS 355 may be used as an American Politics OR a Political Theory Course)
- POS 401 - Seminar in Political Theory Credits: 3
- POS 486 - Religious Thought, the American Identity, and U.S. Public Policy Credits: 3  
(POS 486 may be used as an American Politics or a Political Theory Course)

## Internship and Independent Study Courses:

- INT 494 - (PAA, POS) Field Experience Credits: Ar  
(INT 494 (POS) cannot be used as the political science major's capstone course)
- POS 493 - American Politics Internship Credits: 3, 6 or 9
- POS 495 - Congressional Internship Credits: 6 or 9
- POS 496 - International Affairs Internship Credits: 6 or 9
- POS 498 - Independent Study in Political Science Credits: 3

## Capstone Course:

- POS 487 - SL: Practicum in Engaged Policy Studies I Credits: 3  
And
- POS 488 - Practicum in Engaged Policy Studies II Credits: 3  
Or
- POS 499 - Senior Seminar in Political Science Credits: 3

## Suggested curriculum for the B.A. in Political Science

### First Year - First Semester

- ENG 101 - College Composition Credits: 3
- POS 100 - American Government Credits: 3
- Electives Credits: 3
- General Education: Western Cultural Tradition Credits: 3
- General Education: Mathematics Credits: 3

### First Year - Second Semester

- POS 120 - Introduction to World Politics Credits: 3
- POS 241 - Introduction to Comparative Politics Credits: 3
- General Education: Social Context and Institutions Credits: 3
- Electives Credits: 3
- General Education: Application Science Credits: 3

### Second Year - First Semester

- POS 201 - Introduction to Political Theory Credits: 3
- Course from Upper Level American Politics Sub-field Credits: 3
- General Education: Cultural Diversity and International Perspectives Credits: 3
- General Education: Mathematics Credits: 3
- Course towards Minor or Double Major Credits: 3

### Second Year - Second Semester

- POS Upper Level Course from International Relations Sub-field Credits: 3
- POS Upper Level Course from Comparative Politics Sub-field Credits: 3
- General Education: Lab-Science Credits: 4
- General Education: Writing Intensive Credits: 3
- General Education: Population and the Environment Credits: 3

## Third Year - First Semester

- POS Upper level American Credits: 3
- POS Upper level theory Credits: 3
- General Education: Artistic and Creative Expression Credits: 3
- Course towards Minor or Double Major Credits: 6

## Third Year - Second Semester

- POS Upper level Elective Credits: 3
- POS Upper level Elective Credits: 3
- General Education: Human Values and Social Context Credits: 3
- Course towards Minor or Double Major Credits: 6

## Fourth Year - First Semester

- POS 499 - Senior Seminar in Political Science Credits: 3
- Electives Credits: 3
- Course towards Minor or Double Major Credits: 6
- POS Upper level elective Credits: 3

## Fourth Year - Second Semester

- POS Upper level electives Credits: 6
- Electives Credits: 9

# Psychology

## OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** A "C-" or better is required in all Psychology (PSY) Foundations classes.

**Other GPA requirements to graduate:** Minimum grade point average of 2.0 in Psychology (PSY) classes.

**Required Course(s) for fulfilling Capstone Experience:** PSY 491 or 3 credits of PSY 494 with a C- or better

**Contact Information:** Michael A. Robbins, Chair, Department of Psychology, 301 Little Hall, (207) 581-2033

The Department 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 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 Infancy: Neurobehavioral Development, Health Psychology, Cognitive Neuroscience, and Foundations of Clinical Psychology. Through our Child Study Laboratory courses at the child study center, students observe and interact with preschool age 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 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, anxiety, 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, social services, and other settings involved in activities related to professional psychology.

### **The Bachelor of Arts in Psychology**

1. A minimum of 35 credits in psychology courses (Note: 48 credits in psychology is the maximum number of credit hours that will count toward the 120 credits needed to graduate, if psychology is the primary major.)
2. A "C-" or better is required in all Psychology (PSY) foundation classes.
3. Majors must accumulate a minimum grade point average of 2.0 in PSY courses.
4. No more than six credits of PSY 492: Problems in Psychology, may count toward the 35 credits required.
5. No more than three credits of PSY 493: Field Experience may count toward the 35 credits required.
6. Students who transfer from other institutions must take a minimum of 2 credits within the department and the department must approve all transfer courses applied to the major.
7. All psychology majors must declare one of the following three concentrations: Abnormal/Social, Biological/Cognitive, or Developmental.
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. These credits should normally be taken with a single instructor and should be completed by the end of the junior year.
  - B. PSY 494 - Senior Research Project
  - C. At least one course not used to fulfill the 400 level course for the concentration from the following list of advanced courses: PSY 401- Health Psychology; PSY 412 - Foundations of Clinical Psychology; PSY 424 - Abnormal Child 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; or any 500-level course.

Courses numbered 500-599 are graduate courses that are open to both undergraduate and graduate students. Junior and/or senior psychology majors considering graduate study in psychology are encouraged to enroll in one or more of these courses. Undergraduates require permission of the instructor to register for 500-level courses.

The requirements listed on this page are specific to this particular major. Students are also responsible for meeting any graduation requirements set out by their college. Students in the College of Liberal Arts and Sciences (CLAS) should make sure to review those requirements as stated on the College of Liberal Arts & Sciences page of the catalog.

## **A. Foundations**

Students must pass each of the following foundation courses with a grade of C- or higher.

- PSY 100 - General Psychology Credits: 3  
(Prerequisite for all other psychology courses)
- PSY 241 - Statistics in Psychology Credits: 4  
(Prerequisite for PSY 245)
- PSY 245 - Principles of Psychological Research Credits: 4

(Prerequisite for all 300 and 400 level Psychology courses)

## B. Core Areas

Students must pass each of the following core area courses:

- PSY 212 - Abnormal Psychology Credits: 3
- PSY 223 - Psychology of Childhood Credits: 3  
**or**
- PSY 224 - Psychology of Adolescence Credits: 3
- PSY 230 - Social Psychology Credits: 3
- PSY 350 - Cognition Credits: 3
- PSY 365 - Biopsychology and Behavioral Neuroscience Credits: 3

## C. Concentration

Students must declare a concentration in one of the following 3 areas: 1) Abnormal/Social, 2) Developmental, or 3) Biological/Cognitive by the beginning of their junior year. To fulfill the concentration, a student must pass 3 courses in their chosen area of concentration (see below). At least one of these courses must be at the 400 level.

Note that some of these concentration courses also satisfy some of the core area requirements listed in Section B. A Declaration of Concentration Form should be completed and submitted to the Department of Psychology.

### Abnormal/Social:

- PSY 208 - Theories of Personality Credits: 3
- PSY 212 - Abnormal Psychology Credits: 3
- PSY 230 - Social Psychology Credits: 3
- PSY 251 - Psychology of Motivation Credits: 3
- PSY 401 - Health Psychology Credits: 3
- PSY 412 - Foundations of Clinical Psychology Credits: 3
- PSY 424 - Abnormal Child Psychology Credits: 3
- PSY 430 - Current Topics in Social Psychology Credits: 3

### Biological/Cognitive:

- PSY 350 - Cognition Credits: 3
- PSY 361 - Sensation and Perception Credits: 3
- PSY 365 - Biopsychology and Behavioral Neuroscience Credits: 3
- PSY 401 - Health Psychology Credits: 3
- PSY 422 - Infancy: Neurobehavioral Development Credits: 3
- PSY 465 - Hormones, Brain and Behavior Credits: 3
- PSY 466 - Cognitive Neuroscience Credits: 3



## Developmental:

- PSY 223 - Psychology of Childhood Credits: 3
- PSY 224 - Psychology of Adolescence Credits: 3
- PSY 320 - Child Study Laboratory I Credits: 3
- PSY 321 - Child Study Laboratory II Credits: 3
- PSY 422 - Infancy: Neurobehavioral Development Credits: 3
- PSY 424 - Abnormal Child Psychology Credits: 3
- PSY 425 - Social Issues in Developmental Psychology Credits: 3

## D. Affiliated Science

**Students must pass one of the following affiliated science courses:**

- BIO 100 - Basic Biology Credits: 4  
**or**
- BIO 222 - Biology: The Living Science Credits: 3

Note that **BIO 100** is a prerequisite for all additional biology courses while **BIO 222** is intended for individuals who will not be taking additional biology courses. Although recommended, **BIO 223** (the lab that accompanies BIO 222) is not required for the psychology major.

## E. Capstone Experience and Writing-Intensive Course in the Major

Students must pass with a C- or higher:

- PSY 491 - Senior Seminar in Psychology Credits: 3  
**or**
- PSY 494 - Senior Research Project Credits: 1-3 <sup>1</sup> (minimum of 3 credit hours)  
**or**
- HON 499 - Honors Thesis Credits: 3 <sup>2</sup>

<sup>1</sup>PSY 494 must be a minimum of 3 credit hours

<sup>2</sup>HON 499 must be a topic in Psychology and the thesis advisor must be from the Psychology Department. In such cases, 3 of the required 35 credit hours in Psychology will be waived.

## Note:

The specific requirements above are for the Psychology major itself. The baccalaureate degree granted will be that associated with the primary major as declared by the student. The student is required to satisfy all of the requirements imposed by the university and the college of the primary major. Students are reminded that if Psychology is their primary major, they must take at least 72 hours of non-psychology coursework and must declare and complete a minor or double major to graduate. No more than 6 credits of PSY 492 (Problems in Psychology) and no more than 3 credits of PSY 493 (Field Experience) may count toward the 35 credit hours in psychology requirement.

# Romance Languages

## OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 120 (30 within major)

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** None.

**Other GPA requirements to graduate:** A minimum accumulative GPA of 2.0 ("C") in the major.

**Required Course(s) for fulfilling Capstone Experience:** FRE 495 or SPA 495

**Contact Information:** Jane Smith, Chair of MLC, 201 Little Hall, (207) 581-2075, jsmith@maine.edu

### 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, and SPA 305 or 306 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. FRE 495 or SPA 495 Senior Project Credits 0-3. (This satisfies a General Education Requirement).
4. INT 410 - Introduction to the Study of Linguistics Credits: 3

The requirements listed on this page are specific to this particular major. Students are also responsible for meeting any graduation requirements set out by their college. Students in the College of Liberal Arts and Sciences (CLAS) should make sure to review those requirements as stated on the College of Liberal Arts & Sciences page of the catalog.

# Sociology

## OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** At least a "C" in either ENG 212 or ENG 317; at least a "C-" in a statistics course; at least a "C" in each of the Core Requirements except for SOC 101.

**Other GPA requirements to graduate:** 2.0 for the 33 credits of required and elective Sociology courses.

**Required Course(s) for fulfilling Capstone Experience:** SOC 499

**Contact Information:** Amy Blackstone, Chair, 201D Fernald Hall, 581-2392, [amy.blackstone@umit.maine.edu](mailto:amy.blackstone@umit.maine.edu)

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 an optional concentration within the major: (1) Crime, Law, and Justice. We also offer a minor in Sociology.

The Sociology curriculum provides 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.

## Requirements

1. Satisfy general education requirements.
2. Core requirements for a Sociology major (12 credits): SOC 101, SOC 390, SOC 460, SOC 499.
3. Sociology Electives (15 Credits): Six of the 15 credits must be 300 or 400- level Sociology courses. SOC 310 may not be taken as an elective.
4. One of the following courses must be passed with a grade of "C" or better: ENG 212 or ENG 317. One of the following statistics courses must be passed with a grade of "C-" or better: ANT 462, MAT 215, MAT 232, PSY 241, SOC 310.
5. All Core Requirements (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.
6. Residency Requirement: All students in Sociology must take at least 15 credits of UM Courses (excluding SOC 101) in order to earn the degree.

The requirements listed on this page are specific to this particular major. Students are also responsible for meeting any graduation requirements set out by their college. Students in the College of Liberal Arts and Sciences (CLAS) should make sure to review those requirements as stated on the College of Liberal Arts & Sciences page of the catalog.

## Required Courses in Suggested Sequence for the B.A. in Sociology

## First Year - First Semester

- ENG 101 - College Composition Credits: 3
- SOC 101 - Introduction to Sociology Credits: 3
- General Education Requirements Credits: 9

## First Year - Second Semester

- SOC 2XX Credits: 3
- General Education Requirements Credits: 9
- Electives Credits: 3

## Second Year - First Semester

- SOC 2XX Credits: 3
- General Education Requirements Credits: 9
- Electives Credits: 3

## Second Year - Second Semester

- General Education Requirements Credits: 12
- Electives Credits: 3

## Third Year - First Semester

- ENG 212 - Persuasive and Analytical Writing Credits: 3  
or
- ENG 317 - Business and Technical Writing Credits: 3
- SOC 301 - Microsociology: Interaction and the Self Credits: 3
- SOC 302 - Macrosociology: The Structure of Societies Credits: 3

## Third Year - Second Semester

- SOC 390 - Logic of Sociological Inquiry Credits: 3
- Statistics Course Credits: 3
- SOC 3XX or 4XX Electives Credits: 6
- Electives Credits: 6

## Fourth Year - First Semester

- SOC 460 - Major Ideas in Sociology Credits: 3

- SOC 3XX or 4XX Electives Credits: 3
- Electives Credits: 9

## Fourth Year - Second Semester

- SOC 499 - Senior Seminar Credits: 3
- Electives Credits: 12

## Crime, Law, Justice Concentration

Total of 15 credits. The grades for all 15 credits must average a C.

### Required Courses:

- SOC 214 - Crime and Criminal Justice Credits: 3
- SOC 314 - Law and Society Credits: 3

### Two of the following:

At least two of the following must be taken to complete the concentration:

- SOC 208 - Problems of Violence and Terrorism Credits: 3
- SOC 240 - Topics in Sociology Credits: 3
- SOC 337 - Sociology of Mental Illness Credits: 3

### One of the following:

At least one of the following must be taken to complete the concentration:

- POS 282 - Introduction to American Law Credits: 3
  - POS 370 - International Terrorism: The Challenges for America Credits: 3
  - POS 383 - American Constitutional Law Credits: 3
  - POS 384 - American Civil Liberties Credits: 3
  - POS 470 - International Law Credits: 3
  - PSY 212 - Abnormal Psychology Credits: 3
- The other sociology course listed above

## Spanish

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 120 (30 within major)

**Minimum Cumulative GPA required to graduate: 2.0**

**Minimum Grade requirements for courses to count toward major: None.**

**Other GPA requirements to graduate:** A minimum accumulative GPA of 2.0 ("C") in the major.

**Required Course(s) for fulfilling Capstone Experience:** SPA 495

**Contact Information:** Jane Smith, Chair of MLC, 201 Little Hall, (207) 581-2075, jsmith@maine.edu

1. Demonstration of listening comprehension, oral, reading, and writing proficiency (students who have not received at least a "B" in SPA 305 or 306 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.

The requirements listed on this page are specific to this particular major. Students are also responsible for meeting any graduation requirements set out by their college. Students in the College of Liberal Arts and Sciences (CLAS) should make sure to review those requirements as stated on the College of Liberal Arts & Sciences page of the catalog.

## Special Requirements:

- INT 410 - (ANT, ENG, MLC) Introduction to the Study of Linguistics Credits: 3
- SPA 305 - Applied Spanish Credits: 3  
and/or
- SPA 306 - Workshop in Speaking and Writing Spanish Credits: 3
- SPA 301 - Introduction to Literary Theory Credits: 3  
or
- SPA 307 - Readings in Peninsular Literature Credits: 3  
or
- SPA 308 - Readings in Spanish American Literature Credits: 3
- SPA 495 - Senior Project in Spanish Credits: 0-3
- SPA 495 satisfies a General Education requirement
- 400 level Spanish courses including at least one language and one literature course Credits: 15

## Highly Recommended:

- HTY 105 - History of Ancient and Medieval Europe Credits: 3
- HTY 106 - History of Modern Europe Credits: 3

## Studio Art

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate: 120**

**Minimum Cumulative GPA required to graduate: 2.0.**

**Minimum Grade requirements for courses to count toward major:** Majors must have "C-" or better in all required ART and ARH courses.

**Other GPA requirements to graduate:** A minimum cumulative GPA of 2.0 in the major.

**Contact Information:** Dr. Michael Grillo, Associate Professor, Chair, Department of Art, 107 Lord Hall, (207) 581-3246

Bachelor of Arts (BA)

Bachelor of Fine Arts (BFA)

The requirements listed on these pages are specific to that particular major. Students are also responsible for meeting any graduation requirements set out by their college. Students in the College of Liberal Arts and Sciences (CLAS) should make sure to review those requirements as stated on the College of Liberal Arts & Sciences page of the catalog.

## Bachelor of Arts (BA)

The Department 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.

To graduate, students in the Bachelor of Arts (BA) in Studio Art need to complete:

48 credits in Studio Art (with C- or better)

72 credits in Non-Studio (with D or better)

adding up to a Total of 120 Degree Hours (with a 2.00 minimum GPA).

ART 499 is required for fulfilling the Capstone Experience Requirement

Required classes for the Bachelor of Arts (BA) in Studio Art are as follows:

### Required Foundation Courses in Art - 12 Credits

- ART 100 - Drawing I Credits: 3
- ART 110 - 2-D Design Credits: 3
- ART 120 - 3-D Design Credits: 3
- ART 200 - Drawing II Credits: 3

## Required Studio Courses - 27 credits

- ART 220 - Sculpture I Credits: 3
- ART 230 - Painting I Credits: 3
- ART 240 - Printmaking I Credits: 3
- ART 270 - Digital Art I Credits: 3
- ART 2xx-3xx Studio Elective
- ART 320 - Sculpture II Credits: 3
- ART 340 - Printmaking II Credits: 3
- ART 4xx Advanced Studio Elective
- ART 499 - Studio Art Senior Capstone Credits: 3

## Studio Electives - 9 credits

Select 3 courses (9 credits) from the following:

- ART 300 - Drawing III Credits: 3
- **OR**
- ART 302 - Figure Drawing Credits: 3
- ART 330 - Painting II Credits: 3
- ART 370 - Digital Art IIA: 3D Modeling and Animation Credits: 3
- ART 420 - Sculpture III Credits: 3
- ART 430 - Painting III Credits: 3
- ART 440 - Printmaking III Credits: 3
- ART xxx Studio Elective
- ART 3xx - 4xx Advanced Studio Elective

## Required Art History Courses - 15 credits

- ARH 155 - Art and Visual Culture in the Ancient and Medieval Worlds Credits: 3
- ARH 156 - Art and Visual Culture in the Modern Era Credits: 3
  
- ARH 2xx - 4xx Pre-1750
- ARH 2xx - 4xx Post 1750
- ARH 3xx - 4xx Art History Elective

## Required Courses in Suggested Sequence for the B.A. in Studio Art

### First Year - First Semester



- ARH 155 - Art and Visual Culture in the Ancient and Medieval Worlds Credits: 3
- ART 100 - Drawing I Credits: 3
- ART 110 - 2-D Design Credits: 3
- or
- ART 120 - 3-D Design Credits: 3
- General Education Requirements/Electives Credits: 6

## First Year - Second Semester

- ARH 156 - Art and Visual Culture in the Modern Era Credits: 3
- ART 110 - 2-D Design Credits: 3
- or
- ART 120 - 3-D Design Credits: 3
- ART 200 - Drawing II Credits: 3
- General Education Requirements/Electives Credits: 6

All four studio foundation courses (ART 100, ART 110, ART 120, ART 200) are required before students take intermediate level studio courses

## Second Year - First Semester

- ART 200-level studios Credits: 6
- ARH 200-400's ARH Requirements Credits: 3
- General Education Requirements Credits: 3-4
- Elective Credits: 3

## Second Year - Second Semester

- ART 200-300 level studios Credits: 6
- ARH 200-400's ARH Requirements Credits: 3
- General Education Requirements Credits: 3-4
- Elective Credits: 3

## Third Year - First Semester

- ART 200-300 level studio Credits: 3
- ART 300-400 level studio Credits: 3
- General Education Requirements Credits: 3-4
- Elective Credits: 6

## Third Year - Second Semester

- ART 200-300 level studio Credits: 3
- ART 300-400 level studio Credits: 3
- General Education Requirements Credits: 3-4

- Elective Credits: 6

## Fourth Year - First Semester

- ART 499 - Studio Art Senior Capstone Credits: 3
- ART 300-400 level studio Credits: 3
- Electives Credits: 6
- General Education Requirement Credits: 3-4

## Fourth Year - Second Semester

- ART Studio Electives Credits: 6
- ARH 300-400's Art History Elective Credits: 3
- Electives Credits: 6

## Bachelor of Fine Arts (BFA)

The Department 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.

To graduate, students in the Bachelor of Fine Arts (BFA) in Studio Art need to complete:

66 credits in Studio Art (with C- or better)

54 credits in Non-Studio (with D or better)

adding up to a Total of 120 Degree Hours (with a 2.00 minimum GPA).

Required classes for the Bachelor of Fine Arts (BFA) in Studio Art are as follows:

### Required Foundation Courses in Art - 12 credits

### Required Studio Courses - 21 credits

## Studio Electives - 27 credits

## Senior Courses - 6 credits

## BFA Area Concentration Courses - 18 credits

These 18 credits are included in the 66 credits required for a BFA Degree, and are composed of 200, 300, and 400 level Studio Art courses.

- ART 498 - Directed Study in Studio Art Credits: Ar
- ART xxx
- ART xxx
- ART xxx
- ART xxx
- ART xxx

## Required Art History Courses - 15 credits

- ARH 155 - Art and Visual Culture in the Ancient and Medieval Worlds Credits: 3
- ARH 156 - Art and Visual Culture in the Modern Era Credits: 3
- ARH 2xx - 4xx Pre-1750
- ARH 2xx - 4xx Post-1750
- ARH 3xx - 4xx Art History Elective

## Required Courses in Suggested Sequence for the B.F.A. in Studio Art

### First Year - First Semester

- ARH 155 - Art and Visual Culture in the Ancient and Medieval Worlds Credits: 3
- ART 100 - Drawing I Credits: 3
- ART 110 - 2-D Design Credits: 3
- or
- ART 120 - 3-D Design Credits: 3
- General Education Requirements/Electives Credits: 6

### First Year - Second Semester

- ARH 156 - Art and Visual Culture in the Modern Era Credits: 3

- ART 110 - 2-D Design Credits: 3
- ART 120 - 3-D Design Credits: 3
- ART 200 - Drawing II Credits: 3
- General Education Requirements/Electives Credits: 6

All four studio foundation courses (ART 100, ART 110, ART 120, ART 200) are required before students take intermediate level studio courses

## Second Year - First Semester

- ART 200-level studio Credits: 6
- ARH 200-400's ARH Requirements Credits: 3
- General Education Requirements Credits: 3-4
- Elective Credits: 3

## Second Year - Second Semester

- ART 200-300 level studio Credits: 6
- ARH 200-400's ARH Requirements Credits: 3
- General Education Requirements Credits: 3-4
- Elective Credits: 3

## Third Year - First Semester

- ART 200-300 level studio Credits: 6
- ART 300-400 level studio Credits: 3
- General Education Requirements Credits: 3-4
- Elective Credits: 3

## Third Year - Second Semester

- ART 200-300 level studio Credits: 6
- ART 300-400 level studio Credits: 6
- General Education Requirements Credits: 3-4

## Fourth Year - First Semester

- ART 499 - Studio Art Senior Capstone Credits: 3
- General Education Requirement Credits: 3-4
- ART studio elective Credits: 3
- ART 300-400 level studio Credits: 6

## Fourth Year - Second Semester

- ART 498 - Directed Study in Studio Art Credits: Ar
- ART 400 Studio Elective Credits: 3
- ART Studio Electives Credits: 3-6
- ARH 300-400's level Art History Credits: 3

## Theatre

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** Theatre majors must receive a grade of C or better in all theatre courses required for the major. If a student receives a grade of C- or lower they must repeat the course and raise the grade to receive degree credit.

**Other GPA requirements to graduate:** A minimum accumulative GPA of 2.0 ("C") in the major.

**Required Course(s) for fulfilling Capstone Experience:** THE 415

**Contact Information:** Dr. Tom Mikotowicz, Department Chair, Class of '44 Hall Room 208, 581-1965, miko@maine.edu

The Division of Theatre and Dance offers the Bachelor of Arts degree in Theatre. Within the context of a liberal arts education, the B.A. in Theatre provides students an opportunity to study acting, directing, design and technology, as well as theatre history, performance studies, and literature. Students with other majors may minor in theatre, and they can also minor in dance as part of their educational experience.

The B.A. 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 one semester of any language.

Study in theatre includes 27 credits in required theatre courses and 6 credits in theatre electives, totaling 33 credits to receive the B.A. degree. 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 acting, dancing, directing of original scripts, or staging of choreography. A Readers' Theatre series, the Underdog and Upperdog directing workshops, the occasional Summer Music Theatre program, and the annual Maine Masque production give students additional opportunities to test their skills in acting and directing. Furthermore, majors are required to actively participate in all facets of theatre/dance production program and are encouraged to become involved in student-directed shows.

Undergraduate study in Theatre prepares students for graduate work in theatre and dance or in related fields of study. It also prepares students for theatre-related careers on and off stage. Graduates go on to careers as teachers, actors, designers, dancers, directors, technicians, and stage managers.

The requirements listed on this page are specific to this particular major. Students are also responsible for meeting any graduation requirements set out by their college. Students in the College of Liberal Arts and Sciences (CLAS) should make sure to review those requirements as stated on the College of Liberal Arts & Sciences page of the catalog.

### Basic Courses

Every major must take the following 27 credit hours of theatre courses:

- THE 202 - Script Analysis Credits: 3
- or
- THE 112 - Survey of Dramatic Literature Credits: 3
- THE 117 - Fundamentals of Acting Credits: 3
- THE 120 - Introduction to Stagecraft Credits: 3
- THE 121 - Introduction to Stagecraft Laboratory I Credits: 1
- THE 122 - Introduction to Stagecraft Laboratory II Credits: 1
- THE 200 - Design for Performance Credits: 3
- THE 216 - Play Production Credits: 3
- THE 300 - Introduction to Performance Studies Credits: 3
- THE 402 - Movement Training for Actors Credits: 3
- THE 415 - Capstone Experience in Theatre Credits: 1
- THE 460 - Theatre History Credits: 3

## Theatre Electives

Majors must select 6 credits hours of electives from the following courses:

- THE 111 - Introduction to Theatre Credits: 3
- THE 118 - Stage Makeup Credits: 3
- THE 130 - Introduction to Costume Construction Credits: 3
- THE 131 - Introduction to Costume Construction Laboratory Credits: 1
- THE 201 - Fundamentals of Characterization Credits: 3
- THE 268 - Theatre Practicum, Technical Credits: 1-3
- THE 269 - Theatre Practicum in Acting Credits: 1-3
- THE 310 - Topics in Theatre Technology Credits: 3
- THE 320 - Topics in Theatre Design Credits: 3
- THE 340 - Playwriting, Directing and Performing Laboratory Credits: 3
- THE 400 - Voice and Speech for the Actor Credits: 3
- THE 403 - Styles and Techniques of Comedy Credits: 3
- THE 466 - Stage Directing Credits: 3
- THE 480 - Topics in Theatre Credits: 3
- THE 497 - Independent Study in Theatre I Credits: 1-3
- THE 498 - Independent Study in Theatre II Credits: 1-3

## Graduate Level

The following courses are offered on the graduate level to students pursuing graduate degrees from other programs, as well as to advanced senior level students:

## Required Courses in Suggested Sequence for the B.A. in Theatre\*

First Year - First Semester - 16 Credits\*

- ENG 101 - College Composition Credits: 3
- THE 117 - Fundamentals of Acting Credits: 3  
(Gen Ed. Creative & Artistic Expression)
- THE 120 - Introduction to Stagecraft Credits: 3
- THE 121 - Introduction to Stagecraft Laboratory I Credits: 1
- General Education Requirement: Mathematics Credits: 3
- Elective Credits: 3

## First Year - Second Semester - 16 Credits

- DAN 101 - Beginner Modern Dance I Credits: 2
- THE 112 - Survey of Dramatic Literature Credits: 3  
or
- THE 202 - Script Analysis Credits: 3  
(Gen Ed. Western Cultural Tradition)
- THE 122 - Introduction to Stagecraft Laboratory II Credits: 1
- General Education Requirement: Science with Lab Credits: 4
- College Requirement Credits: 3
- General Education Requirement: Mathematics Credits: 3

## Second Year - First Semester - 15 Credits

- DAN 101 - Beginner Modern Dance I Credits: 2  
or
- DAN 102 - Beginner Ballet I Credits: 2  
or
- DAN 103 - Beginner Jazz I Credits: 2
- THE 121 - Introduction to Stagecraft Laboratory I Credits: 1
- THE 216 - Play Production Credits: 3
- General Education Requirement: Social Contexts and Institutions Credits: 3
- College Requirement or Elective Credits: 3

## Second Year - Second Semester - 15 Credits

- DAN 105 - Beginner Tap Credits: 2
- General Education Requirement: Population and the Environmental Credits: 3
- General Education Requirement: Science Credits: 3
- College Requirement Credits: 3

- Language Requirement Credits: 4

### Third Year - First Semester - 14 Credits

- THE 460 - Theatre History Credits: 3
- Theatre Elective Credits: 3
- College Requirement or Elective Credits: 3
- General Education Requirement: Ethics Credits: 3
- Elective or Additional Theatre Course Credits: 2

### Third Year - Second Semester - 14 Credits

- THE 300 - Introduction to Performance Studies Credits: 3  
(Gen Ed Cultural Diversity and International Perspective, and Writing Competency)
- THE 402 - Movement Training for Actors Credits: 3
- Elective or Additional Theatre Course Credits: 3
- College Requirement or Credits: 3
- Elective Credits: 2

### Fourth Year - First Semester - 15 Credits

- THE 460 - Theatre History Credits: 3  
(Gen Ed Cultural Diversity & International Perspective, and Writing Competency)
- Elective or Additional Theatre Course Credits: 3
- College Requirement Credits: 3
- Elective Credits: 3
- Elective Credits: 3

### Fourth Year - Second Semester - 15 Credits

- THE 402 - Movement Training for Actors Credits: 3
- THE 415 - Capstone Experience in Theatre Credits: 1
- Theatre elective Credits: 3
- Elective or Additional Theatre Course Credits: 3
- Elective, College Requirement or Additional Theatre Course Credits: 3
- Elective Credits: 2



## Note:

Some Core Theatre courses count toward the Cultural Diversity and International Perspectives, Artistic and Creative Expression, and Writing Intensive and Writing in the Major. So, the student may just take Elective courses in place of these requirements.

Up to five theatre courses (15 credits) can be taken in addition to the major requirement of 33 credits and have them count as part of the 120 credits needed to graduate.

Students, who want to minor in dance, may substitute the equivalent credits of non-theatre electives for Dance credits. DAN courses count as credits outside the major and can be used for electives.

Also, Elective Credits in this four-year plan may be applied to the College of Liberal Arts and Humanities requirement of a second major or a minor in another discipline.

# Women's, Gender, and Sexuality Studies

## OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** None.

**Other GPA requirements to graduate:** 2.0 for the 33 credits of required and elective courses.

**Required Course(s) for fulfilling Capstone Experience:** WGS 480

**Contact Information:** Mazie Hough, Director of the Women's, Gender, and Sexuality Studies Program, (207) 581-1228.

The Bachelor of Arts in Women's, Gender, and Sexuality Studies is an interdisciplinary program offered by the Women's, Gender, and Sexuality Studies Program with two joint-appointment faculty members\* on loan from a variety of academic units or hired part time for their particular expertise. Students who major in Women's, Gender and Sexuality 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. In the private sector graduates are successful in management positions, especially in those involving work with diverse groups of people. Women's, Gender, and Sexuality Studies is also an excellent second major or minor for students majoring in a wide variety of disciplines, such as anthropology, nursing, political science, sociology, English, social work, and history.\*\*

Women's, Gender, and Sexuality Studies majors will gain a more complete understanding of how the social construction of gender has influenced the roles, contributions, and experiences of both women and men in many different cultures, now and in the past. Such awareness can help them better understand our contemporary world with its changing roles for all. They will bring to the gender analysis of any situation knowledge of the complexity of its interaction with race, social class, sexual orientation, and other forms of diversity. They will be able to recognize the connection between Women's, Gender, and Sexuality Studies scholarship and the scholarship of other disciplines. Students will develop an appreciation for the connections between Women's, Gender, and Sexuality 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 lives of everyone in whatever public or private spheres they choose. The major consists of at least 33 credits structured this way.

\*English and History among others.

\*\*Students can also major in International Affairs with a concentration in Global Women's, Gender, and Sexuality Issues.

The requirements listed on this page are specific to this particular major. Students are also responsible for meeting any graduation requirements set out by their college. Students in the College of Liberal Arts and Sciences (CLAS) should make sure to review those requirements as stated on the College of Liberal Arts & Sciences page of the catalog.

The core curriculum consists of 15 student credit hours, plus a 3-credit Practicum/Internship with any designator. Electives will consist of 15 credit hours chosen from a broad list of possible course options, of which at least 6 credit hours need to be at the 300 or 400 level. Honor's Theses will not count toward the capstone requirement; however, if a student completes an Honor's Thesis on a WGS topic, then 3 credit hours of that will count toward the elective total.

## Core Courses:

- SOC 329 - Sociology of Gender Credits: 3  
or
- SOC 330 - Perspectives on Women Credits: 3
  
- WGS 101 - Women's, Gender and Sexuality Studies Credits: 3
- WGS 340 - Transnational Feminisms Credits: 3
- WGS 410 - Feminist, Gender and Queer Theory Credits: 3
- WGS 480 - Senior Seminar in Women's, Gender, and Sexuality Studies Credits: 3

## Possible Practicum/Internship Courses:

- CHF 401 - Peer Education Credits: 3
- CHF 496 - Field Experience in Human Development and Family Studies Credits: 1-6
- INT 195 - (University Wide) Community Engagement / Service Learning Credits: 1-3
- INT 196 - (University Wide) Academic and Career Exploration Internship Credits: 0-3
- WGS 498 - Directed Study in Women's, Gender, and Sexuality Studies Credits: Ar

## Electives:

- WGS 103 - Introduction to Lesbian, Gay, Bisexual, and Transgender Studies Credits: 3
- WGS 201 - Topics in Women's, Gender, and Sexuality Studies Credits: 3
- WGS 230 - Women, Health, and the Environment Credits: 3
- WGS 235 - Franco American Women's Experience Credits: 3
- WGS 250 - Women and Music Credits: 3

- WGS 270 - Native American Women Credits: 3
- WGS 301 - Intermediate Topics in Women's, Gender, and Sexuality Studies Credits: 3
- WGS 360 - Feminism and Cinema Credits: 3
- WGS 371 - Immigration, Women and Society Credits: 3
- ANT 245 - Sex and Gender in Cross-Cultural Perspective Credits: 3
- ANT 328 - S/He: Rituals & Folk Traditions of Gender Credits: 3
- CHF 351 - Human Sexuality Credits: 3
- CHF 451 - Family Relationships Credits: 3
- CHF 452 - Violence in the Family Credits: 3
- CLA 201 - Women in the Ancient World Credits: 3
- CMJ 225 - Sex, Gender and Communication Credits: 3
- CMJ 405 - Women and Communication Credits: 3
- CMJ 410 - Social Influence of Mass Communication Credits: 3
- CMJ 475 - Sexualities in Mass Communication Credits: 3
- ENG 246 - American Women's Literature Credits: 3
- ENG 256 - British Women's Literature Credits: 3
- ENG 471 - Literature, Gender, and Gender Theory Credits: 3
- HTY 332 - Womanhood in America Credits: 3
- HTY 494 - Women, History and American Society: Selected Topics Credits: 3
- PAX 401 - Women Social Activists: Warriors for Peace and Justice Credits: 3
- PHI 236 - Feminist Ethical, Social and Political Theory Credits: 3
- POS 385 - Women and Politics Credits: 3
- SOC 330 - Perspectives on Women Credits: 3
- SOC 371 - Immigration, Women and Society Credits: 3
- SWK 330 - Contemporary Issues in Diversity and Pluralism Credits: 3

## Topics Courses as Electives:

If the Topic's courses listed below contain sustained, systematic study and discussion of Women's, Gender and Sexuality issues, they will count as electives.

- CHF 404 - Selected Topics in Child Development and Family Life Credits: 3
- ENG 129 - Topics in English Credits: 3
- ENG 229 - Topics in Literature Credits: 3
- ENG 429 - Topics in Literature and Language Credits: 3
- SWK 330 - Contemporary Issues in Diversity and Pluralism Credits: 3

## Minor

### Minor: Anthropology

#### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** 2.0

**Minimum Grade requirements for courses to count toward minor:** Anthropology Minors must have a "C-" or better in ANT 101 and ANT 102 courses. Nine credit hours must be at the 200-level or above.

**Residency requirement:** A minimum of 9 credit hours must be completed at the University of Maine.

**Contact Information:** Gregory Zaro, Chair, Associate Professor of Anthropology and Climate Change, 5773 S. Stevens Hall, Room 242, (207) 581-1857, Fax: (207) 581-1823, gregory.zaro@umit.maine.edu

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. Courses in biological/physical anthropology also are offered. In addition, the Department offers courses in folklore, oral history, and geography, which are closely related to anthropology.

## Required Core Classes (6 credits):

- ANT 101 - Introduction to Anthropology: Human Origins and Prehistory Credits: 3
- ANT 102 - Introduction to Anthropology: Diversity of Cultures Credits: 3

## Electives (12 credits):

- Any four ANT or GEO courses

## Minor: Archaeology

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 18; minimum of 9 credit hours must be at the 200-level or above

**Minimum Grade requirements for courses to count toward minor:** None

**GPA requirements to earn minor:** 2.0

**Residency Requirement:** A minimum of 9 credit hours that include ANT 317 must be completed at the University of Maine

**Required Courses:** Students minoring in Archaeology must pass ANT 101, ANT 102, and ANT 317 with at least a C- grade.

**Contact Information:** Gregory Zaro, Chair of Anthropology; 242 South Stevens Hall; 581-1857; gregory.zaro@umit.maine.edu

The minor in Archaeology introduces students to a variety of approaches and theoretical frameworks used to reconstruct ancient human behaviors and culture. It also emphasizes the importance of the historical, geographic, and environmental context of the development of humankind. As an interdisciplinary field that provides a broad view of the past, the minor will complement several major degree programs, including Art, Biology, Earth Sciences, Ecology and Environmental Sciences, Engineering, International Affairs/Anthropology, History and Zoology. The curriculum draws on departmental strengths in anthropological and environmental archaeology and offers foundational courses in archaeology, regional specializations throughout the globe, and topics of special interest.

### Required Core Classes (9 credits):

- ANT 101 - Introduction to Anthropology: Human Origins and Prehistory Credits: 3 (C- minimum)
- ANT 102 - Introduction to Anthropology: Diversity of Cultures Credits: 3 (C- minimum)
- ANT 317 - Fundamentals of Archaeology Credits: 3 (C- minimum)

### Electives (9 credits):

- ANT 140 - Cities of the Ancient World Credits: 3
- ANT 170 - Popular Archaeology Credits: 3
- ANT 207 - Introduction to World Archaeology Credits: 3
- ANT 210 - Biological Anthropology Credits: 3
- ANT 260 - Forensic Anthropology Credits: 3
- ANT 316 - Shipwreck Sites: Archaeological and Historical Investigations Credits: 3
- ANT 372 - North American Prehistory Credits: 3
- ANT 420 - Human Impacts on Ancient Environments Credits: 3
- ANT 421 - Inca Society and Peasants of the Andes Credits: 3
- ANT 475 - Environmental Archaeology Credits: 3
- ANT 476 - The Ancient Maya Credits: 3
- ANT 477 - Field Research in Archaeology Credits: 2-6
- ANT 478 - Zooarchaeology Credits: 4
- ANT 479 - Laboratory Techniques in Prehistoric Archaeology Credits: 3
- ANT 480 - Andean Prehistory Credits: 3
- ANT 494 - Method and Theory in Archaeology Credits: 3
- or additional courses with prior approval from the department chair

### Restrictions:

Anthropology majors: Due to significant course overlap, Anthropology majors may not earn a minor in Archaeology.

International Affairs/Anthropology majors: because there is a limited curricular overlap, ANT 102 (required) and ANT 421 (elective), International Affairs majors with a concentration in Anthropology are free to earn a minor in Archaeology. However, IA/ANT majors may use ANT 412 to fulfill an elective for their major or the Archaeology minor, but not both.

### Minor: Art History

## OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 21

**GPA requirements to earn minor:** 2.0

**Minimum Grade requirements for courses to count toward minor:** Students must have a grade of "C-" or better in all ART & ARH required courses taken.

**Contact Information:** Michael Grillo, Associate Professor of Art and Chairperson Department of Art; 5743 Lord Hall, Room 107; (207) 581-3246, michael.grillo@umit.maine.edu

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 to contemporary eras (1800 onward) and the earlier epochs 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.

### Required Courses:

- ARH 155 - Art and Visual Culture in the Ancient and Medieval Worlds Credits: 3
- ARH 156 - Art and Visual Culture in the Modern Era Credits: 3
- ART 100 - Drawing I Credits: 3
- or
- ART 110 - 2-D Design Credits: 3
- or
- ART 120 - 3-D Design Credits: 3
- ARH 2XX Pre-1750 Survey Credits: 3
- ARH 2XX Modern Survey Credits: 3
- ARH 3XX or 4XX Modern Seminar Credits: 3
- ARH 3XX or 4XX Pre-Modern Seminar Credits: 3

## Minor: Astronomy

## OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 21

**GPA requirements to earn minor:** 2.0 in the core and elective courses

**Contact Information:** David Batuski, Department of Physics, Room 120 Bennett Hall, (207) 581-1016, batuski@maine.edu

This program is intended for students enrolled in an undergraduate degree program at the University of Maine.

## Required Courses

The Department Chairperson may consider exceptions to this list on a case-by-case basis.

- PHY 111 - General Physics I Credits: 4  
and
- PHY 112 - General Physics II Credits: 4  
or
- PHY 121 - Physics for Engineers and Physical Scientists I Credits: 4  
and
- PHY 122 - Physics for Engineers and Physical Scientists II Credits: 4
- PHY 223 - Special Relativity Credits: 1
- PHY 236 - Introductory Quantum Physics Credits: 3

Three or more courses from the following list:

- AST 110 - Introduction to Astronomy Laboratory Credits: 1
- AST 215 - General Astronomy I Credits: 3
- AST 216 - General Astronomy II Credits: 3
- AST 451 - Astrophysics Credits: 1-3  
(See Footnote 1)
- AST 497 - Topics in Astrophysics Credits: 1-3  
(See Footnote 1)

<sup>1</sup>These courses may be taken for 1-3 credits, as arranged.

## Minor: Canadian Studies

# OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** Minimum GPA of 3.0 in six courses that toward the minor.

**Minimum Grade requirements for courses to count toward minor:** C

**Contact Information:** Stephen J. Hornsby, Director and Professor of Geography and Canadian Studies, 207-581-4226, Hornsby@maine.edu

Ties between Maine and Canada are long-standing and varied. Geographically, the state is virtually surrounded by the Canadian provinces of Québec and New Brunswick. Almost half of the state's population has ancestral roots in Canada. Economic connections, from energy to tourism are close, and environmental issues frequently demand international cooperation. More

broadly, Americans need to know much more about Canada. Growing integration of the U.S. and Canadian economies aided by the North American Free Trade Agreement; common environmental concerns, particularly over-harvesting of natural resources and pollution of common waterways and airspace; and long-standing social and cultural ties are significant reasons for studying the Canadian-American relationship.

Canadian Studies is an interdisciplinary minor that offers students an opportunity to access courses from one of the largest and most comprehensive Canadian Studies programs in the country. The program is particularly strong in Anthropology, Archeology, Economics, French, History, and Political Science. In addition, there are course offerings in Art, Business Administration, Education, English, Forestry, Franco American Studies, Geography, Geology, Journalism, and Native American Studies.

A student majoring in International Affairs may choose the Canadian Studies concentration.

## Requirements for a Minor

The Canadian Studies Minor requires 18 credits or 6 courses. These must include CAN 101 - Introduction to Canadian Studies; two additional Canadian Core Courses (100% Canadian content); and three Canadian Related Courses (25% or higher in Canadian content).

Note: Courses taken at a Canadian university through the Canada Year Program or Study Abroad in Canada semester may be included toward the Canadian Studies minor. See our website for more information on the Canada Year Program.

## Canadian Core Courses

- BUA 328 - Canadian/U.S. Business: A Comparison Credits: 3
- CAN 101 - Introduction to Canadian Studies Credits: 3
- CAN 401 - Readings in Canadian Studies Credits: 3
- ECO 340 - The Canadian Economy: Issues and Policies Credits: 3
- ENG 236 - Intro to Canadian Literature Credits: 3
- FRE 350 - Multidisciplinary Readings in French Credits: 1
- FRE 397 - French (May Term) Credits: 3
- FRE 463 - Quebec Poetry Credits: 3
- FRE 464 - Quebec Theatre Credits: 3
- FRE 490 - Advanced Topics in French Credits: 1-3
- FRE 495 - Senior Project in French Credits: 0-3
- HTY 459 - Colonial Canada Credits: 3
- HTY 460 - Modern Canada Credits: 3
- INA 201 - Topics in International Affairs Credits: 3
- POS 243 - Canadian Government and Politics Credits: 3
- POS 344 - Public Policy in Canada Credits: 3
- POS 372 - Canadian Foreign Policy Credits: 3
- POS 496 - International Affairs Internship Credits: 6 or 9
- POS 499 - Senior Seminar in Political Science Credits: 3

## Canadian Related Courses



- ANT 221 - Introduction to Folklore Credits: 3
- ANT 372 - North American Prehistory Credits: 3
- ARH 270 - Topical Survey in History of Art Credits: 3  
Topic: Art of the North: The Group of Seven In Context
- CMJ 314 - International Mass Communication Credits: 3
- ENG 336 - Canadian Literature Credits: 3
- ERS 100 - An Introductory Survey of Geology Credits: 3
- FAS 101 - Introduction to Franco American Studies Credits: 3
- FAS 120 - People, Places and Pasts Credits: 3
- FAS 230 - Franco American Women's Experience Credits: 3
- FAS 240 - French Exploration and Settlement of Maine, 1604-1760 Credits: 3
- FAS 250 - Exile, Migrations and Communities Credits: 3
- FAS 270 - Immigration, Yesterday and Today Credits: 3
- FAS 329 - Topics in Franco American Studies Credits: 3
- FAS 442 - French Language of North America Credits: 3
- FRE 101 - Elementary French I Credits: 3 - 4
- FRE 102 - Elementary French II Credits: 3 - 4
- FRE 117 - Accelerated French I Credits: 6
- FRE 201 - Intermediate French I Credits: 3 - 4
- FRE 202 - Intermediate French II Credits: 3 - 4
- FRE 218 - Accelerated French II Credits: 6
- FRE 305 - French Conversation and Composition I Credits: 3
- FRE 306 - French Conversation and Composition II Credits: 3
- FRE 307 - French for Business Credits: 3
- FRE 309 - Readings in French Literature Credits: 3
- FRE 310 - Readings in Francophone Literature Credits: 3
- FRE 315 - Advanced French Conversation Credits: 3
- FRE 320 - French Pronunciation Credits: 3
- FRE 400 - Advanced French Grammar Credits: 3
- FRE 401 - Translation and Comparative Stylistics Credits: 3
- FRE 413 - Advanced Composition and Stylistics Credits: 3
- FRE 442 - French Language of North America Credits: 3
- FRE 465 - North American French Novel Credits: 3
- GEO 349 - Early Modern North America in Atlantic Perspective Credits: 3
- HTY 199 - Problems in History Credits: 3
- HTY 398 - Historical Issues Credits: 3
- HTY 481 - Amerindians of the Northeast: A History Credits: 3
- HTY 483 - Violence in North American History Credits: 3
- NAS 102 - Introduction to Wabanaki Culture, History and Contemporary Issues Credits: 3
- NAS 201 - Topics in Native American Studies Credits: 1-3
- POS 241 - Introduction to Comparative Politics Credits: 3
- NAS 401 - Advanced Topics in Native American Studies Credits: 3
- POS 273 - International Relations Credits: 3
- WGS 235 - Franco American Women's Experience Credits: 3
- WGS 301 - Intermediate Topics in Women's, Gender, and Sexuality Studies Credits: 3
- CMJ 545 - Media Ecology Credits:3
- DIS 530 - Disability Policy Credits: 3
- ENG 536 - Studies in Canadian literature Credits: 3

# Minor: Chemistry

## OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 23

**GPA requirements to earn minor:** None.

**Minimum Grade requirements for courses to count toward minor:** Chemistry minors must earn a C- or better.

**Contact Information:** Barbara J.W. Cole, Professor and Chair, 5706 Aubert Hall, Room 154,581-1168

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. Students must take a minimum of 23 credits from the following list, including at least one advanced chemistry course (CHY 242 or 400 level CHY course). At least 14 credits must be taken at the University of Maine.

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.

## Courses:

- CHY 121 - Introduction to Chemistry Credits: 3
- CHY 122 - The Molecular Basis of Chemical Change Credits: 3
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- CHY 124 - The Molecular Basis of Chemical Change Laboratory Credits: 1
- CHY 242 - Principles of Quantitative Analysis and Solution Equilibria Credits: 5
- CHY 251 - Organic Chemistry I Credits: 3
- CHY 252 - Organic Chemistry II Credits: 3
- CHY 253 - Organic Chemistry Laboratory I Credits: 2
- CHY 254 - Organic Chemistry Laboratory II Credits: 2
- CHY 423 - Introductory Polymer Chemistry Credits: 3
- CHY 431 - Structure and Mechanism in Biological Chemistry Credits: 3
- CHY 443 - Instrumental Analysis Credits: 3
- CHY 453 - Intermediate Organic Chemistry Credits: 4
- CHY 461 - Advanced Inorganic Chemistry I Credits: 3
- CHY 462 - Organometallic Chemistry Credits: 3
- CHY 471 - Physical Chemistry I Credits: 3
- CHY 472 - Physical Chemistry II Credits: 3
- CHY 475 - Physical Chemistry III Credits: 3
- CHY 477 - Nanoscience Credits: 3
- CHY 483 - Introductory Wood Chemistry Credits: 3

# Minor: Classical Studies

## OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** None

**Minimum Grade requirements for courses to count toward minor:** None.

**Contact Information:** Jane Smith, Chair of MLC, 201 Little Hall, (207) 581-2075, jsmith@maine.edu

The classical period in Western history, defined as the period from the Bronze Age to the fall of the Roman Empire in the 5th century CE, comprises the "roots" of modern society. In order to understand where we are and where we are going, it is necessary to know where we have been. European and American literature, philosophy, law, religion, politics, language, and art have all been either directly or indirectly formed in reaction to Classical culture. By examination and study of classical civilization, the student will develop a sense of how the ancients responded to the universal questions of human experience. Through an implicit comparison of the cultures of ancient Greece and Rome to our own, the student will also come to have a fuller understanding of the humanist and cultural impulses which have formed and which continue to form our own experience. This curriculum is particularly useful to the student with interests in ancient history, philosophy, art history, anthropology, literature and political science. It will also prove useful to the student preparing for a career in law.

A minimum of 18 credits or 6 courses is required. There are two tracks - Classical Studies, Ancient Language track and Classical Studies.

Classical Studies, Ancient Language Track: **At this time admission to the Ancient Language Track has been suspended.**

The student who elects the language track chooses Latin as a fulfillment of the language requirement. The advanced student may choose ancient Greek rather than Latin (as available), with permission of the instructor. The student will take either two semesters of Latin beyond the elementary level or two semesters of Greek at elementary level or above. In addition, the student will take a minimum of three courses in the CLA sequence, and may take the remaining credits from the list of CLA courses or from the list provided below.

Classical Studies:

The student who takes the general Classical Studies curriculum may wish to concentrate in offerings in Ancient History, Art History, Classical Philosophy, or Political Science. The student may elect to take all courses in the Classics curriculum (below) or the minimum four courses in the Classics curriculum and the remainder from the courses listed.

For more information about Classical Studies, please contact the Department of Modern Languages and Classics in 201 Little Hall, (207)581-2072.

## Art History

- ARH 155 - Art and Visual Culture in the Ancient and Medieval Worlds Credits: 3
- ARH 251 - Classical Art and Architecture Credits: 3

## Classics

- CLA 101 - Greek Literature in English Translation Credits: 3
- CLA 102 - Latin Literature in English Translation Credits: 3
- CLA 201 - Women in the Ancient World Credits: 3
- CLA 202 - Mythology of the Ancient Near East, North African and Greece Credits: 3
- CLA 400 - Hero: Myth and Meaning Credits: 3
- CLA 401 - Amazons: Myth and Reality Credits: 3

## English

- ENG 231 - Western Tradition in Literature: Homer Through the Renaissance Credits: 3

## History

- HTY 105 - History of Ancient and Medieval Europe Credits: 3
- HTY 401 - History of Greece Credits: 3
- HTY 402 - Roman History Credits: 3
- HTY 433 - Greek and Roman Mythology Credits: 3

## Modern Language

- MLC 231 - Western Tradition in Literature: Homer Through the Renaissance Credits: 3
- MLC 293 - Study Abroad Credits: 1-6

## Philosophy

- PHI 210 - History of Ancient Philosophy Credits: 3

## Political Science

- POS 301 - Classical Political Thought Credits: 3

## Minor: Computer Science

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** 2.0

**Minimum Grade requirements for courses to count toward minor:** All courses that count toward the minor must be taken for a grade.

**Contact Information:** Silvia Nittel and Carol Roberts, Undergraduate Coordinators, School of Computing and Information Science, (207) 581-3681 and (207) 581-3522, nittel@maine.edu, Carol\_Roberts@umit.maine.edu

There are two different tracks that earn a minor in Computer Science. Both require at least 18 credit hours of COS courses.

### Computer Science - Track 1

- COS 125 - Introduction to Problem Solving Using Computer Programming Credits: 3
- COS 140 - Foundations of Computer Science Credits: 3
- COS 225 - Object-Oriented Design, Programming and Data Structures Credits: 4
- COS 226 - Introduction to Data Structures Credits: 3
- Plus any two additional COS courses at the 300-level or above

### Computer Science - Track 2

- COS 140 - Foundations of Computer Science Credits: 3
- COS 220 - Introduction to C++ Programming Credits: 3
- COS 221 - Data Structures in C++ Credits: 3
- COS 235 - Computer Architecture Credits: 4
- Plus any two additional COS courses at the 300-level or above
- Students who have taken ECE 177 or a similar course, may be excused from taking COS 220. If they choose to be excused from COS 220, they must either take COS 125 or an additional COS course at the 200 level or above.
- Students who have taken an ECE architecture course, may be excused from taking COS 235, but must take an additional COS course at the 300 level or above.

## Minor: Creative Writing

## OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn a minor:** None

**Minimum Grade requirements for courses to count toward minor:** A "C-" or better is required in all English Minor Courses

**Residency Requirement:** A minimum of 12 Credit Hours must be completed at the University of Maine

**Contact Information:** David Kress, Program Director, Creative Writing, 304 Neville Hall, (207) 581-3808,  
david.kress@maine.edu

The Creative Writing minor is designed for students interesting in learning how to write or to improve their own original creative works. The focus of the minor is the workshop. The sequential requirements train minors in a progressive manner: from the basic skills of writing creatively, through the theoretical and aesthetic questions of narratology and poetics, and, finally, in the skill of completing a polished manuscript. The minor provides the opportunity for minors to study both poetry and prose, as well as some literature, creative non-fiction, and special topics in creative writing, such as translation, playwriting, or literary collage.

The minor can only be declared after the completion of Eng 205: Introduction to Creative Writing with a grade of B or better. Please note: 300 and 400-level writing courses require the submission of a manuscript and instructor approval to enroll. Priority is given to English Majors concentrating in creative writing and Creative Writing minors.

### Required 6 credits:

- ENG 205 - An Introduction to Creative Writing Credits: 3
- ENG 222 - Reading Poems Credits: 3
- or
- ENG 170 - Foundations of Literary Analysis Credits: 3

### Plus 12 more credits

Four upper level Creative Writing Workshops (pick four from the following:)

- ENG 307 - Writing Fiction Credits: 3
- ENG 308 - Writing Poetry Credits: 3
- ENG 309 - Writing Creative Nonfiction Credits: 3
- ENG 405 - Topics in Creative Writing Credits: 3
- ENG 407 - Advanced Fiction Writing Credits: 3
- ENG 408 - Advanced Poetry Writing Credits: 3

Note: any 400-level Workshop may be repeated once for credit

## Minor: Dance

## **OVERVIEW OF DEGREE REQUIREMENTS**

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** None.

**Minimum Grade requirements for courses to count toward minor:** None.

**Contact Information:** Dan Bilodeau, Department Chair, 5788 Class of '44 Hall, 581-1962, daniel.bilodeau@maine.edu

The minor in dance is designed to provide the student with basic foundational courses in dance technique, as well as in choreography, history, and production, all with a focus toward performance. Students will receive dance technique training in ballet, modern, tap, and jazz. In addition, students will study composition and gain expertise in choreography. Students will study dance history and will be involved in the many aspects of creating a performance, from advertising to backstage and house management. All dance students are encouraged to participate in the annual dance concert as well as informal studio showings and the activities of the UMaine Dance Club. Production credits may be available for these efforts.

**Students are required to take a total of 18 credits.**

**Every minor must take 14 credits in technique courses:**

- DAN 101 - Beginner Modern Dance I Credits: 2
- DAN 102 - Beginner Ballet I Credits: 2
- DAN 103 - Beginner Jazz I Credits: 2
- DAN 105 - Beginner Tap Credits: 2
- DAN 121 - Beginner Modern Dance II Credits: 2
- DAN 122 - Beginner Ballet II Credits: 2
- DAN 123 - Beginner Jazz II Credits: 2
- DAN 130 - Ballroom and World Dance Forms Credits: 2
- DAN 201 - Intermediate Modern Dance Credits: 2-3
- DAN 202 - Intermediate Ballet Credits: 2-3
- DAN 203 - Intermediate Jazz Credits: 2
- DAN 205 - Intermediate Tap Credits: 2
- DAN 270 - Pilates Conditioning and Functional Anatomy Credits: 3
- DAN 297 - Introductory Topics in Dance Credits: 2
- DAN 397 - Intermediate Topics in Dance Credits: 2
- DAN 497 - Advanced Topics in Dance Credits: 2
- DAN 498 - Dance Project/Thesis Credits: 3
- MUO 111 - Marching Band Credits: 0-1

**Every minor must take 3 credits of either course:**

- DAN 250 - Dance Composition I Credits: 3
- or

- DAN 266 - Dance History Credits: 3

Every minor must take 1 credit of this course:

- DAN 112 - Production/Rehearsal Credits: 1

## **Minor: English**

### **OVERVIEW OF DEGREE REQUIREMENTS**

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** 2.0

**Minimum Grade requirements for courses to count toward minor:** A "C-" or better is required in all English Minor courses.

**Contact Information:** Laura Cowan May, Department Chairperson, 304A Neville Hall, (207) 581-3823,  
laura.cowan@maine.edu

18 credits of English courses are required, **excluding ENG 001 and ENG 101**. 12 of these credits must be University of Maine courses.

### **Required Courses:**

Six courses at least four (4) of which include:

Two of the following:

- ENG 170 - Foundations of Literary Analysis Credits: 3
- ENG 222 - Reading Poems Credits: 3
- ENG 271 - The Act of Interpretation Credits: 3
- Two 300-level literature courses

AND two (2) courses\*:

- any two courses at the 200 or 300 level
- or one (1) course at the 200 or 300 level and one (1) course at the 400 level

\*additional courses can be writing and/or literature courses, in any combination.

## **Minor: Ethics, and Social and Political Philosophy**



## OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** 2.0

**Minimum Grade requirements for courses to count toward minor:** A grade of C- or better is required in any Philosophy courses counting towards minor.

**Contact Information:** Jessica Miller, Chair, Department of Philosophy, 5776 The Maples, (207) 581-3862, [jessica.miller@umit.maine.edu](mailto:jessica.miller@umit.maine.edu).

A minor in Ethics, and Social and Political Philosophy shall consist of at least 18 credits with a minimum course grade of C-. At least 9 credits must be taken at the University of Maine. Students enrolled in this minor must satisfy the following requirements:

### Core Requirements (6 credits)

- PHI 230 - Ethics Credits: 3
- PHI 240 - Social and Political Philosophy Credits: 3

### At least one course from the following list (3 credits)

- PHI 100 - Contemporary Moral Problems Credits: 3
- PHI 231 - Topics in Applied Ethics Credits: 3
- PHI 232 - Environmental Ethics Credits: 3
- PHI 233 - Business Ethics Credits: 3
- PHI 235 - Biomedical Ethics Credits: 3
- PHI 244 - Philosophy of Law Credits: 3
- PHI 432 - Environmental Philosophy and Policy Credits: 3

### At least two courses from the following list (6 credits)

- PHI 210 - History of Ancient Philosophy Credits: 3
- PHI 236 - Feminist Ethical, Social and Political Theory Credits: 3
- PHI 312 - History of Modern Philosophy Credits: 3
- PHI 342 - Marxist Philosophy I: The Philosophy of Karl Marx Credits: 3
- PHI 344 - Theories of Justice Credits: 3
- PHI 345 - Global Justice Credits: 3
- PHI 346 - The Philosophy of Mahatma Gandhi Credits: 3

At least 3 additional credits in Philosophy

## **Minor: Film and Video**

### **OVERVIEW OF DEGREE REQUIREMENTS**

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** None

**Minimum Grade requirements for courses to count toward minor:** C-

**Contact Information:** Michael Grillo, Department of Art, 107 Lord Hall, 581-3246; michael.grillo@umit.maine.edu

The Film and Video minor provides a critical focus for interdisciplinary studies of core cultural issues, including those addressing the diversity of modes of conceptualization, social identity, questions on the cultural implications of technology, aesthetic development, and conceptualization of history, among others. The minor draws courses from several departments, including Art, Communications and Journalism, English, History, Modern Language and the Classics, and New Media.

Students in the minor will have options of pursuing intersecting paths addressing history, theory, and practice, so that they could best focus the minor to their major and other studies. The minor requires a minimum of 18 credits, as follows:

### **Introductory course (total of 3 credits)**

- CMJ 245 - Film Criticism and Theory Credits: 3
- ENG 280 - Introduction to Film Credits: 3
- HTY 218 - History of Film Credits: 3

### **Two or more History and Theory (minimum of 6 credits)**

- ARH 369 - Film and Video Theory Seminar Credits: 3
- CMJ 398 - Topics in Mass Communication Credits: 3
- FRE 390 - Topics in French Credits: 1-3
- FRE 430 - French Film Survey Credits: 3
- FRE 490 - Advanced Topics in French Credits: 1-3
- GER 420 - German Film Credits: 3
- GER 490 - Topics in German Credits: 1-3

- MLC 421 - World Cinema: Multiple Perspectives on Identity and Culture Credits: 3
- SPA 420 - Spanish Film Credits: 3
- WGS 360 - Feminism and Cinema Credits: 3

## Two or more Practice courses (minimum of 6 credits)

- CMJ 351 - Multimedia Production Credits: 4
- NMD 204 - Introduction to Time-Based Art and Design Credits: 3
- NMD 245 - Film Criticism and Theory Credits: 3
- NMD 295 - Topics in New Media Credits: 1-3
- NMD 343 - Digital Narrative Workshop I Credits: 3
- NMD 344 - Time-Based Art and Design I Credits: 3
- NMD 324 - Year in Film I Credits: 3
- NMD 370 - Digital Art IIA: 3D Modeling and Animation Credits: 3
- NMD 371 - Digital Art IIB: Digital Video Credits: 3
- NMD 398 - Topics in New Media Credits: 1-3
- NMD 424 - Year in Film II Credits: 3
- NMD 430 - Topics in New Media Credits: 1-3
- NMD 498 - Practicum in New Media I Credits: 3
- NMD 499 - Practicum in New Media II Credits: 3

## Minor: Folklore

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor: 18**

**GPA requirements to earn minor: 2.0.**

**Minimum Grade requirements for courses to count toward minor: None.**

**Contact Information:** Pauleena MacDougall, Director, Folklore Center, S. Stevens Hall, Room 110, (207)581-1848, pauleena@maine.edu

Folklore focuses on the study of society, past or present, and uses a variety of methodologies drawn from the humanities and social sciences to understand them. To concentrate on a society's folklore (at regional as well as national levels) is to understand its traditional self-definition through its myths, epics, ballads, folktales, legends, beliefs, and other cultural phenomena, including music, song, and dance. Studying a group's folklore shows how it identifies itself in relation to other groups. Inherently interdisciplinary, the study of folklore and mythology often draws resources from several disciplines, while maintaining its own methodological lens.

## Required Courses (9 credits)

- ANT 102 - Introduction to Anthropology: Diversity of Cultures Credits: 3
- ANT 221 - Introduction to Folklore Credits: 3
- ANT 425 - Recorded Interviewing Techniques and Methods Credits: 3

## 6 Credits:

must come from the following list:

- ANT 426 - Native American Folklore Credits: 3
  - ANT 431 - Folklore, the Environment and Public Policy Credits: 3
  - CMJ 106 - Storytelling Credits: 3
  - ENG 129 - Topics in English Credits: 3
  - ENG 131 - The Nature of Story Credits: 3
  - ENG 170 - Foundations of Literary Analysis Credits: 3
  - ENG 229 - Topics in Literature Credits: 3
  - ENG 429 - Topics in Literature and Language Credits: 3
  - FAS 250 - Exile, Migrations and Communities Credits: 3
  - HTY 211 - Maine and the Sea Credits: 3
  - JST 203 - Jewish History and Culture I: The Middle Ages to 1750 Credits: 3
  - JST 204 - Jewish History and Culture II: The Jews & Europe, 1750-1948 Credits: 3
  - MES 101 - Introduction to Maine Studies Credits: 3
  - MES 201 - The Maine Coast Credits: 3
  - MES 498 - Advanced Topics in Maine Studies Credits: 1-3  
Topics: A Sense of Place: Maine and Regional Identity  
Doing Nearby History and Folklore in the Classroom
  - NAS 102 - Introduction to Wabanaki Culture, History and Contemporary Issues Credits: 3
  - WGS 235 - Franco American Women's Experience Credits: 3
  - WGS 371 - Immigration, Women and Society Credits: 3
- Other courses require committee approval

## Students must complete either

- a) a folklore-related senior project in their home major
- b) a mentored folklore senior project or
- c) a for-credit internship in a folklore related field (using ANT 497 Independent study)

## Minor: Franco American Studies

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** None.

**Minimum Grade requirements for courses to count toward minor:** None.

**Contact Information:** Susan Pinette, Director of Franco American Studies, (207) 581-3791, francostudies@maine.edu

In New England, and particularly in Maine, citizens of French Canadian and Acadian descent comprise approximately 25 percent of the population. The long-neglected story of this ethnic community represents a crucial element in the history and the current social dynamic of Maine and the Northeast, and constitutes a cultural bridge to French Canada, particularly the neighboring provinces of Québec and the Maritimes.

Franco American Studies is an interdisciplinary program that explores the French cultures of the United States and Canada, emphasizing the people of Franco American heritage in Maine and the Northeast region. It studies Franco American culture within the broader context of American ethnic communities and other French-speaking people worldwide. The curriculum is designed to teach the Franco American past and present: topics of study include problems of identity, the politics of language, literature, historical struggles, women's issues and experience, economic structures, and the role of family.

The program offers a minor in Franco American Studies as well as courses at all levels. Students who wish to minor in Franco American Studies complete eighteen credits, including FAS 101, and at least 2 other core courses, and a selection of "Related Courses" from the list below.

For complete information about Franco-American Studies, contact Susan Pinette, (207) 581-3791, francostudies@maine.edu.

## Core Courses

- FAS 101 - Introduction to Franco American Studies Credits: 3
- FAS 120 - People, Places and Pasts Credits: 3
- FAS 200 - Primary Sources in Franco American Studies Credits: 3
- FAS 230 - Franco American Women's Experience Credits: 3
- FAS 240 - French Exploration and Settlement of Maine, 1604-1760 Credits: 3
- FAS 250 - Exile, Migrations and Communities Credits: 3
- FAS 270 - Immigration, Yesterday and Today Credits: 3
- FAS 329 - Topics in Franco American Studies Credits: 3
- FAS 442 - French Language of North America Credits: 3
- FAS 459 - Colonial Canada Credits: 3

## Related Courses

- ANT 221 - Introduction to Folklore Credits: 3
- ANT 425 - Recorded Interviewing Techniques and Methods Credits: 3
- ENG 237 - Coming of Age in America Credits: 3
- FRE 201 - Intermediate French I Credits: 3 - 4
- FRE 202 - Intermediate French II Credits: 3 - 4

- FRE 397 - French (May Term) Credits: 3
- FRE 463 - Quebec Poetry Credits: 3
- FRE 464 - Quebec Theatre Credits: 3
- FRE 465 - North American French Novel Credits: 3
- HTY 467 - Early 20th Century America, 1914-1945 Credits: 3
- HTY 477 - The American Worker Credits: 3
- SOC 201 - Social Inequality Credits: 3

## Minor: French

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** None.

**Minimum Grade requirements for courses to count toward minor:** None.

**Contact Information:** Jane Smith, Chair of MLC, 201 Little Hall, (207) 581-2075, jsmith@maine.edu

The requirements for a minor in French are a minimum of 18 credits in the language, 12 of which must be above the intermediate level. For more information and a list of available courses, please contact the Department of Modern Languages and Classics in 201 Little Hall, (207) 581-2072 or (207) 581-2075.

## Minor: Geography

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** 2.0

**Minimum Grade requirement for courses to count towards minor:** Students minoring in Geography must pass GEO 100 with at least a C- grade.

**Minimum of 9 credit hours must be at the 200-level or above**

**Residency requirement:** A minimum of 9 credit hours must be completed at the University of Maine

**Contact Information:** Stephen J. Hornsby, Director and Professor of Geography and Canadian Studies (207) 581-4226, hornsby@maine.edu

The discipline of geography is broadly based in earth sciences and humanities as well as in the social sciences. Geographers pursue research and teaching in areas as diverse as geomorphology, hydrology, transportation, urban planning, cultural ecology, and human-environment relationships and pre-history. The geography curricula will appeal to undergraduates seeking a general yet practical University education. Geographers find employment in such career fields as resource management, urban and

regional planning, and environmental assessment, as well as in the traditional occupations of elementary and secondary school teaching. Students are urged to discuss and plan course selection with the Coordinator.

## Required core class (3 credits)

- GEO 100 - World Geography Credits: 3

## Electives (15 credits)

A minimum of 9 credits must come from courses with a GEO or joint GEO designator:

- ANT 250 - Conservation Anthropology: The Socio-Cultural Dimension of Environmental Issues Credits: 3
- ANT 311 - Geography of Climate Change Credits: 3
- **or**
- GEO 311 - Geography of Climate Change Credits: 3
- ANT 464 - Ecological Anthropology Credits: 3
- BIO 319 - General Ecology Credits: 3
- ECO 377 - Introduction to Natural Resource Economics and Policy Credits: 3
- ECO 479 - Land Use Planning Credits: 3
- HTY 479 - U.S. Environmental History Credits: 3
- GEO 212 - Geography of Maine Credits: 3
- **or**
- HTY 212 - Geography of Maine Credits: 3
- GEO 275 - Geography of Globalization Credits: 3
- **or**
- HTY 275 - Geography of Globalization Credits: 3
- GEO 349 - Early Modern North America in Atlantic Perspective Credits: 3
- **or**
- HTY 349 - Early Modern North America in Atlantic Perspective Credits: 3

## Minor: German

**Please note:** This minor is currently suspended for potential elimination and is not accepting new students. Students currently in this minor should refer to the catalog in effect when they entered the program.

**Contact Information:** Jane Smith, Chair of Modern Languages and Classics, 201 Little Hall, 581-2075,  
jane.smith@umit.maine.edu

## Minor: Graphic Design

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor: 18**

**GPA requirements to earn minor: 2.0**

**Minimum Grade requirements for courses to count toward minor:** Students must have a grade of "C-" or better in all courses applied to the minor.

**Contact Information:** Michael Grillo, Chair, Department of Art, 107 Lord Hall, (207) 581-3246.

In an era when digital technologies have brought the menus of professional design to the world at large, the Department of Art offers a minor in which students bring together aesthetics, design history, cultural studies, and internship possibilities in the professional world of Graphic Design. Students from all majors, particularly in Art, Communications, Business, New Media, Innovation Engineering, and other fields that use graphic data presentations, model building, and visual imagining will all find the minor as a vital complement to their field. Good design plays a core role in shaping our ability to communicate effectively. Demand for Graphic Design skills continue to grow, as students find graphic information and visual thinking increasingly important in an expanding variety of fields. For innovative interdisciplinary studies, building on emerging social connectivity, evolving publication platforms, and new, inventive business models, the Graphic Design Minor offers the opportunity for students to develop expertise in new expanding fields emerging from visual communication and creative imaging.

On campus, several organizations, including the Maine Journal, ASAP, the Maine Campus, and the Student Innovations Entrepreneurial Centre, among others, offer rich opportunities for students in the Graphic Design Minor to develop their work in professional venues, expand their audiences, and transition to employment in the field. The minor also helps students find local internship possibilities, in business, communications, arts organizations, social services, and other flourishing fields.

**REQUIREMENTS:** The Graphic Design Minor requires eighteen credits, twelve of which are covered by the four required courses, and the remaining six by any on the list below.

## Required Courses

- ART 110 - 2-D Design Credits: 3
- ART 250 - Graphic Design I Credits: 3
- ART 270 - Digital Art I Credits: 3
- ART 350 - Graphic Design II Credits: 3

## Recommended:

- ART 496 - Field Experience in Art Credits: Ar

## Possible Elective Courses:

- ART 200 - Drawing II Credits: 3
- ART 182 - Photography and Digital Imaging Credits: 3
- or
- ART 272 - Digital Imaging Credits: 3



- BUA 270 - Marketing Credits: 3
- BUA 372 - Intergrated Marketing Communication Credits: 3
- CMJ 355 - Advertising Copy and Graphics Credits: 3
- CMJ 370 - Visual Communication Credits: 3
- INV 180 - Create: Innovation Engineering I Credits: 3
- INV 282 - Communicate: Innovation Engineering II Credits: 3
- NMD 202 - Information Design Credits: 3
- NMD 240 - Introduction to Web Concepts and Design Credits: 3
- NMD 302 - Interaction Design in New Media Credits: 3

## Minor: History

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** 2.0

**Minimum Grade requirements for courses to count toward minor:** A "C" or better is required in all History (HTY) courses taken.

**Department Residency Requirement:** At least 9 credits must be earned from the History Department at the University of Maine.

**Contact Information:** Stephen Miller, Chair, Department of History, Room 255 Stevens, (207) 581-1905 or Suzanne Moulton, Administrative Assistant, Department of History, Room 255 Stevens, (207) 581-1908

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.

Students minoring in History must maintain an overall GPA of 2.0 in all History courses to be applied to the minor.

## Minor: International Affairs

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** 2.0

**Minimum Grade requirements for courses to count toward minor:** C

**Foreign Language requirements:** Two semesters of a language or study abroad. For students who study abroad, at least one course must be taught in the host language. Students whose first language is not English may meet the Foreign Language requirement (English) with their TOEFL score.

**Contact Information:** Howard Cody, Director of International Affairs, 109 North Stevens Hall, 581-1868, howard.cody@umit.maine.edu

Study in International Affairs benefits students as they prepare for their roles as national and global citizens, educating them to the dynamics behind a changing global society and introducing them to ways of enhancing international community. The minor in International Affairs offers an interdisciplinary curriculum that enables students from diverse disciplines to integrate an international perspective into their studies and future careers.

## Required Courses:

- INA 101 - Introduction to International Affairs Credits: 3
- One other course from the IA major revised core curriculum
- Choose from one of the revised thematic concentrations: 3 courses in the field designated "primary" field; 1 course from that concentration designated as a secondary field
- Foreign Language requirement: see above.

## Minor: Jazz Studies

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 19

**GPA requirements to earn minor:** None.

**Minimum Grade requirements for courses to count toward minor:** None.

**Contact Information:** Beth Wiemann, Chair, Class of 1944 Hall, 581-1244

The Minor in Jazz Studies is designed to offer students a significant and in-depth experience with jazz, designated an American National Treasure by the 100th U.S. Congress in 1987.

In addition to a total absence of instrument specificity, the performance and study of jazz allows individuals to access a nearly limitless repertory. For musicians whose available solo repertory is quite limited, this opens the door to a lifetime of personal creativity and participation with music in general and jazz in particular.

The focus of this program is the study of jazz through the art of *improvisation*, that is, *spontaneous musical composition*. In addition, highly specific arranging skills (for piano and one other instrument only), as well as sufficient piano skills for the performance of the arrangements created in the coursework, are part of the materials to be covered. The overall purpose is for the students to develop integrated skills in jazz theory, composition, and performance which will allow them to continue to be involved in this music throughout their future musical lives.

Students who elect this program must play a musical instrument of some description in "C," "Bb," or "C bass clef" *only*, that is capable of single-note pitches and a full chromatic scale in tempered tuning. Unpitched percussion is not among these, but percussionists can participate in the coursework on mallet instruments. Vocalists as well will need to play a pitched musical instrument that meets the criteria outlined above. Pianists will need their own portable keyboards.

The requirements are as follows:

- HTY 484 - History of Jazz Credits: 3
- MUY 310 - Jazz Improvisation I Credits: 3
- MUY 311 - Jazz Improvisation II Credits: 3
- MUY 410 - Chamber Jazz Arranging and Piano I Credits: 3
- MUY 411 - Chamber Jazz Arranging and Piano II Credits: 3

## Performing Organizations (4 credits)

A maximum of 2 credits of:

- MUO 143 - UMAINE Jazz Ensemble Credits: 0-1  
with the remainder in:
- MUO 155 Chamber Jazz Ensemble Credits: 2  
or
- MUO 155 Chamber Jazz Ensemble Credits: 4

## Minor: Judaic Studies

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** 2.0

**Minimum Grade requirements for courses to count toward minor:** Grade of "C" or higher required in all courses.

**Contact Information:** Melissa Ladenheim, Adjunct Assistant Professor in Honors (Folklore), 5716 Colvin Hall, Robert B. Thomson Honors Center, (207)581-3263, melissa.ladenheim.@umit.maine.edu

Judaic Studies provides a broad liberal arts background that cultivates an appreciation of the central role played by Jewish culture in the development of human civilization. Without the full depth of a major, this interdisciplinary program provides students some substantive understanding of the historical, religious, literary, philosophical, sociological and political experiences of the Jews; and it offers a diverse disciplinary framing of questions central to the Jewish experience with different perspectives and methodologies. While a year of language study is not expected to lead to mastery, the Hebrew language is one of the strands that unify the history of Judaism. Some knowledge of Hebrew is indispensable for any serious study of Judaism.

## Residency Requirement:

A minimum of 9 credit hours must be completed at the University of Maine.

## Tracks:

Two tracks are available. Judaic Studies and Judaic Studies, Language track.

## Required Core Courses:

- JST 200 - Introduction to Judaism Credits: 3
- JST 203 - Jewish History and Culture I: The Middle Ages to 1750 Credits: 3
- JST 204 - Jewish History and Culture II: The Jews & Europe, 1750-1948 Credits: 3
- plus 3 elective courses

## Required Courses for Language Track:

- 9 credits from Core plus
- HBR 101 - Beginning Modern Hebrew Credits: 3
- HBR 102 - Beginning Modern Hebrew II Credits: 3
- plus 1 elective course

## Elective Courses:

Choose at least 3 courses from this list. Other courses may be taken as electives with the consent of the Coordinator of Judaic Studies.

- ANT 249 - Religion and Violence Credits: 3
- ANT 256 - Ethnic Conflict Credits: 3
- ANT 454 - Cultures and Societies of the Middle East Credits: 3
- ANT 470 - Religion and Politics Credits: 3
- CLA 202 - Mythology of the Ancient Near East, North African and Greece Credits: 3
- HBR 101 - Beginning Modern Hebrew Credits: 3  
(may be taken as elective in the non-language track)
- HBR 102 - Beginning Modern Hebrew II Credits: 3  
(may be taken as elective in the non-language track)
- HTY 411 - The Holocaust Credits: 3
- HTY 446 - History of Modern Middle East, 1800-Present Credits: 3
- MUH 650 Topics in Music History: Entartete Musik: Degenerate Music (see Graduate Catalog for description)
- PAX 201 - Introduction to Peace and Reconciliation Studies Credits: 3
- PAX 398 - Topics in Peace and Reconciliation Studies Credits: 3  
Topic: Genocide
- PAX 491 - Forgiveness: Creating a Culture of Peace and Reconciliation Credits: 3
- PHI 105 - Introduction to Religious Studies Credits: 3
- PHI 223 - Modern Jewish Thought Credits: 3
- POS 309 - Topics in Political Theory Credits: 3  
(topics that are clearly relevant to Judaic Studies may be counted)
- POS 359 - Topics in American Government Credits: 3  
(topics that are clearly relevant to Judaic Studies may be counted)

- POS 370 - International Terrorism: The Challenges for America Credits: 3
- POS 375 - United States and the Middle East Credits: 3
- POS 386 - Religion and Politics in the United States Credits: 3
- POS 469 - Politics of the Middle East Credits: 3
- SOC 208 - Problems of Violence and Terrorism Credits: 3
- SOC 482 - The Sociology of Religion Credits: 3

Other elective courses may be taken as they become available, with the consent of the coordinator of Judaic Studies

## Minor: Latin

**Please note:** This minor is not currently accepting new students.

**Contact Information:** Jane Smith, Chair of Modern Languages and Classics, 201 Little Hall, 581-2075, jane.smith@umit.maine.edu

## Minor: Leadership Studies

# OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to earn minor: 18

Minimum Grade requirements for courses to count toward minor: C

GPA requirements to earn minor: 2.50

Residency Requirement: A minimum of 9 credit hours must be completed at the University of Maine.

Contact Information: Richard J. Powell, Associate Professor, Department of Political Science; 229 N. Stevens Hall; 581-1795; rpowell@maine.edu

The interdisciplinary minor in leadership studies provides students with in-depth knowledge of leadership theory, ethics, skills, and context-based issues, as well as practical, experiential training applicable to nearly any area of study or social setting. The minor prepares students for diverse, real-life experiences as citizen leaders in local, state, national, and global communities.

This broad, interdisciplinary minor draws upon coursework and expertise offered by faculty and staff from colleges across campus.

No more than 6 credits can overlap with those being counted toward another major or minor.

## A. Core Requirements (12 credits)

- LDR 200 - Leadership Ethics Credits: 3
- \* LDR 100 - Foundations of Leadership Credits: 3  
\* **This requirement may also be fulfilled by taking three credits from the following list:**
- MSL 101 - Foundations of Officership Credits: 1
- MSL 102 - Basic Leadership Credits: 1
- MSL 201 - Individual Leadership Studies Credits: 2
- MSL 202 - Leadership and Teamwork Credits: 2
- LDR 300 - Advanced Leadership Theory and Practice Credits: 3  
**\*This requirement may also be fulfilled with the following courses:**
- BUA 460 - Leadership Credits: 3
- NUR 444 - Management and Leadership in Health Care System Credits: 3
- GEE 230 - Introduction to Engineering Leadership and Management Credits: 1  
**NOTE:** GEE 230 is a one-credit course. This course may be used to satisfy this requirement, but students electing this option must take at least two additional credit hours from the electives listed below in order to satisfy the minor requirement of 18 total credit hours.
- LDR 499 - Leadership Engagement Practicum Credits: 3

## B. Leadership Behaviors & Skills Electives (3 credits from the following list):

- CMJ 102 - Fundamentals of Interpersonal Communication Credits: 3
- CMJ 103 - Fundamentals of Public Communication Credits: 3
- CMJ 345 - Small Group Communication: Service-Learning Credits: 3
- CMJ 347 - Argument and Critical Thinking Credits: 3
- CMJ 360 - Nonverbal Communication Credits: 3
- CMJ 367 - Public Relations Credits: 3
- CMJ 370 - Visual Communication Credits: 3
- ENG 317 - Business and Technical Writing Credits: 3
- ENG 415 - Advanced Report & Proposal Writing Credits: 3
- ENG 418 - Topics in Professional Writing Credits: 3
- INV 180 - Create: Innovation Engineering I Credits: 3
- INV 282 - Communicate: Innovation Engineering II Credits: 3
- MSL 401 - Mission Command and the Army Profession Credits: 4
- NAV 303 - Leadership and Management Credits: 3
- PAX 360 - Conflict Resolution: A Relational Approach To Working Through Conflict Credits: 3
- PAX 451 - Mediation: Its Premises, Practices and Policies Credits: 3
- PAX 470 - Sustainable Communication: The Theory and Practice of Nonviolent Communication Credits: 3

## C. Leadership in Communities, Groups, and Organizations Elective (3 credits from the following list):

- LDR 350 - Topics in Leadership Studies Credits: 3
- ANT 270 - Environmental Justice Movements in the United States Credits: 3
- ANT 470 - Religion and Politics Credits: 3
- BUA 325 - Principles of Management and Organization Credits: 3
- BUA 327 - Business and Society Credits: 3
- BUA 270 - Marketing Credits: 3
- CHF 201 - Introduction to Child Development Credits: 3
- CLA 400 - Hero: Myth and Meaning Credits: 3
- CMJ 225 - Sex, Gender and Communication Credits: 3
- CMJ 403 - Persuasion and Social Influence Credits: 3
- CMJ 405 - Women and Communication Credits: 3
- CMJ 420 - Health Communication Credits: 3
- CMJ 430 - Intercultural Communication Credits: 3
- CMJ 470 - Communication in Organizations Credits: 3
- ECO 254 - Small Business Economics and Management Credits: 3
- EHD 202 - Education in a Multicultural Society Credits: 3
- EHD 203 - Educational Psychology Credits: 3
- ENG 253 - Shakespeare: Selected Plays Credits: 3
- HON 170 - Currents and Context Credits: 1
- HON 308 - Visiting Scholar in Ethics Tutorial Credits: 3
- HTY 279 - European Military History Credits: 3
- HTY 401 - History of Greece Credits: 3
- HTY 402 - Roman History Credits: 3
- INV 401 - Systems: Innovation Engineering IV Credits: 3
- KPE 209 - Wilderness First Responder Credits: 3
- KPE 286 - Challenge Course Facilitator Skills Credits: 3
- KPE 287 - Ropes Course Management Credits: 1
- KPE 311 - Maine Wilderness Guide Credits: 3
- KPE 344 - Principles of Coaching Credits: 3
- MES 301 - Rachel Carson, Maine, and the Environment Credits: 3
- MSL 301 - Adaptive Team Leadership Credits: 3
- MSL 302 - Applied Team Leadership Credits: 3
- MSL 350 - The Evolution of American Warfare Credits: 3
- MSL 402 - Mission Command and the Company Grade Officer Credits: 4
- NAV 303 - Leadership and Management Credits: 3
- NAV 304 - Leadership and Ethics Credits: 3
- NUR 409 - Professional Issues: Leadership and Organization Credits: 3
- NUR 453 - Community Nursing Care Management Credits: 2
- NUR 454 - Clinical Adult Nursing Management Credits: 2
- PAX 290 - Nonviolence: Perceptions and Perspectives Credits: 3
- PAX 370 - Building Sustainable Communities Credits: 3
- PAX 400 - Martin Luther King and the Promise of Social Renewal Credits: 3
- PAX 401 - Women Social Activists: Warriors for Peace and Justice Credits: 3
- PHI 230 - Ethics Credits: 3
- PHI 231 - Topics in Applied Ethics Credits: 3
- PHI 232 - Environmental Ethics Credits: 3
- PHI 233 - Business Ethics Credits: 3

- PHI 235 - Biomedical Ethics Credits: 3
- PHI 236 - Feminist Ethical, Social and Political Theory Credits: 3
- PHI 240 - Social and Political Philosophy Credits: 3
- PHI 344 - Theories of Justice Credits: 3
- PHI 345 - Global Justice Credits: 3
- PHI 346 - The Philosophy of Mahatma Gandhi Credits: 3
- PHI 432 - Environmental Philosophy and Policy Credits: 3
- POS 301 - Classical Political Thought Credits: 3
- POS 302 - Medieval Political Thought Credits: 3
- POS 303 - Early Modern Political Thought Credits: 3
- POS 304 - American Political Thought Credits: 3
- POS 305 - Late Modern Political Thought Credits: 3
- POS 306 - Crafting the American Constitution Credits: 3
- POS 307 - Democratic Theory Credits: 3
- POS 353 - The U.S. Congress Credits: 3
- POS 354 - The U.S. Presidency Credits: 3
- POS 357 - Film and Politics Credits: 3
- POS 385 - Women and Politics Credits: 3
- POS 386 - Religion and Politics in the United States Credits: 3
- POS 474 - Conduct of Foreign Policy Credits: 3
- POS 475 - International Security Credits: 3
- POS 486 - Religious Thought, the American Identity, and U.S. Public Policy Credits: 3
- PSY 230 - Social Psychology Credits: 3
- PSY 251 - Psychology of Motivation Credits: 3
- PSY 423 - The Psychology of Parenting Credits: 3
- SFR 106 - Forest Land Navigation and Outdoor Preparedness Credits: 1
- SOC 201 - Social Inequality Credits: 3
- SOC 202 - Social Problems Credits: 3
- SOC 301 - Microsociology: Interaction and the Self Credits: 3
- SOC 329 - Sociology of Gender Credits: 3
- SOC 482 - The Sociology of Religion Credits: 3
- SWK 330 - Contemporary Issues in Diversity and Pluralism Credits: 3
- SWK 350 - Human Behavior and the Social Environment I Credits: 3
- SWK 351 - Human Behavior in the Social Environment II Credits: 3
- SWK 440 - Social Welfare Policy and Issues Credits: 3
- THE 466 - Stage Directing Credits: 3
- WGS 201 - Topics in Women's, Gender, and Sexuality Studies Credits: 3
- WGS 230 - Women, Health, and the Environment Credits: 3
- WGS 301 - Intermediate Topics in Women's, Gender, and Sexuality Studies Credits: 3
- WGS 340 - Transnational Feminisms Credits: 3

## **Minor: Legal Studies**

### **OVERVIEW OF DEGREE REQUIREMENTS**



**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** None.

**Minimum Grade requirements for courses to count toward minor:** A minimum grade of "C-" must be obtained in each course used to satisfy the minor requirements.

**Contact Information:** Mark D. Brewer, Professor and Interim Chair, 113A North Stevens Hall, (207) 581-1871, mark.brewer@umit.maine.edu

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

The campus advisor for the Legal Studies Minor is Professor Mark Brewer of the Political Science Department (113A N. Stevens Hall). Questions about the Legal Studies Minor should be directed to him at (207) 581-1871 or mark.brewer@umit.maine.edu

For information about general pre-law studies and/or advice for students interested in attending law school, contact Pre-Law advisor Crisanne Blackie (308 Memorial Union) at (207) 581-2587 or crisanne.blackie@umit.maine.edu

A Minor in Legal Studies Minor shall consist of 18 credit hours in courses that focus primarily on legal matters. A minimum grade of "C-" must be obtained in each course used to satisfy the minor requirements. A list of courses that count toward the minor appears below. Departments occasionally offer other courses on legal topics that may count as well. Students should contact the campus advisor for the Legal Studies Minor (Professor Mark Brewer) in order to determine if a particular course not listed below would count toward the minor.

## Courses:

- BUA 220 - The Legal Environment of Business Credits: 3
- BUA 312 - Federal Taxation of Individuals Credits: 3
- CET 451 - Construction Law Credits: 3
- CHF 488 - Family Legal Issues Credits: 3
- CMJ 375 - Journalism Studies II: Law and Ethics Credits: 3
- CMJ 412 - Electronic Media Management and Programming Credits: 3
- ECO 479 - Land Use Planning Credits: 3
- EES 324 - Environmental Protection Law and Policy Credits: 3
- ENG 229 - Topics in Literature Credits: 3  
(legal topics only)
- FSN 436 - Food Law Credits: 3
- HTY 464 - America at the Crossroads: The Era of Civil War Reconstruction 1840-1876 Credits: 3
- HTY 499 - Contemporary Problems in History Credits: 1-3  
(legal topics only)
- INT 105 - (ECO, REP) Environmental Policy Credits: 3
- MSL 402 - Mission Command and the Company Grade Officer Credits: 4
- NAV 304 - Leadership and Ethics Credits: 3
- PHI 244 - Philosophy of Law Credits: 3
- PHI 250 - Formal Logic Credits: 3

- PHI 344 - Theories of Justice Credits: 3
- POS 282 - Introduction to American Law Credits: 3
- POS 306 - Crafting the American Constitution Credits: 3
- POS 307 - Democratic Theory Credits: 3
- POS 359 - Topics in American Government Credits: 3  
(legal topics only)
- POS 383 - American Constitutional Law Credits: 3
- POS 384 - American Civil Liberties Credits: 3
- POS 470 - International Law Credits: 3
- POS 484 - The American Constitution and Criminal Due Process Credits: 3
- SMS 120 - Introduction to Forensics Credits: 3
- SOC 214 - Crime and Criminal Justice Credits: 3
- SOC 314 - Law and Society Credits: 3
- SVT 221 - Boundary Law Credits: 3

## Minor: Marxist and Socialist Studies

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** 2.0

**Minimum Grade requirements for courses to count toward minor:** C-

**Department Residency Requirement:** At least 9 credits must be earned from the University of Maine.

**Contact Information:** Professor Douglas Allen, Coordinator of Marxist and Socialist Studies, The Maples; phone: 581-3860; email: douglas.allen@umit.maine.edu

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

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

For complete information about Marxist and Socialist Studies, visit the coordinator at The Maples, phone (207) 581-3860 or contact Prof. Doug Allen at douglas.allen@umit.maine.edu. Several of the courses listed below may or may not count toward this curriculum depending on which professor is teaching the course. Other courses not listed may be acceptable. Interested students should consult with the faculty coordinator for a decision on such matters.

### Required

- PHI 342 - Marxist Philosophy I: The Philosophy of Karl Marx Credits: 3

## Core Courses (6 credits)

- ENG 470 - Topics in Literary Theory and Criticism Credits: 3
- HTY 467 - Early 20th Century America, 1914-1945 Credits: 3
- HTY 468 - America Since 1945 Credits: 3
- LST 201 - Work and Labor in a Global Economy Credits: 3

## Elective Courses (9 credits)

- ARH 262 - Early Modern Art: From Fauvism to Surrealism Credits: 3
- ARH 263 - Late Modern Art: From Abstract Expressionism Through New Forms Credits: 3
- ARH 451 - Art Theory and Criticism Credits: 3
- ARH 452 - Critical Methods in History of Art Credits: 3
- ARH 362 - Medieval Art and Architecture Seminar Credits: 3
- ARH 363 - Renaissance Art and Architecture Seminar Credits: 3
- CMJ 410 - Social Influence of Mass Communication Credits: 3
- ECO 335 - History of Economic Thought Credits: 3
- HTY 241 - History of Globalization, 1900-Present Credits: 3
- HTY 407 - The Age of Monarchs and Revolution: Europe, 1648-1815 Credits: 3
- HTY 409 - Twentieth Century Europe I, 1914-1945 Credits: 3
- HTY 424 - History of Russia II: The Russian Revolution, 1881-1991 Credits: 3
- HTY 442 - The United States and Vietnam: A History Credits: 3
- HTY 473 - History of U.S. Foreign Relations I Credits: 3
- HTY 474 - History of U.S. Foreign Relations II Credits: 3
- HTY 477 - The American Worker Credits: 3
- PHI 240 - Social and Political Philosophy Credits: 3
- PHI 344 - Theories of Justice Credits: 3
- POS 336 - Government and Politics in Russia Credits: 3
- SOC 201 - Social Inequality Credits: 3
- SOC 460 - Major Ideas in Sociology Credits: 3
- WGS 340 - Transnational Feminisms Credits: 3
- WGS 410 - Feminist, Gender and Queer Theory Credits: 3

## Minor: Mathematics

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor: 24**

**GPA requirements to earn minor:** Minimum of a 2.0 GPA in all Math (MAT) courses.

**Minimum Grade requirements for courses to count toward minor:** A "C" or better is required in all Math (MAT) courses.

**Contact Information:** Robert Franzosa, Department of Mathematics and Statistics, Room 333 Neville Hall, (207)581-3916, robert.franzosa@umit.maine.edu

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.

## Courses:

- MAT 126 - Calculus I Credits: 4
- MAT 127 - Calculus II Credits: 4
- MAT 228 - Calculus III Credits: 4
- MAT 258 - Introduction to Differential Equations with Linear Algebra Credits: 4
- MAT 259 - Differential Equations Credits: 3
- MAT 261 - Introduction to Abstract Mathematics Credits: 3
- MAT 262 - Linear Algebra Credits: 3
- STS 332 - Statistics for Engineers Credits: 3
- MAT 425 - Introduction to Real Analysis I Credits: 3
- MAT 426 - Introduction to Real Analysis II Credits: 3
- STS 434 - Introduction to Statistics Credits: 4
- STS 436 - Nonparametric Statistics Credits: 3
- STS 437 - Statistical Methods in Research Credits: 3
- MAT 451 - Dynamical Systems Credits: 3
- MAT 452 - Complex Analysis Credits: 3
- MAT 453 - Partial Differential Equations I Credits: 3
- MAT 454 - Partial Differential Equations II Credits: 3
- MAT 463 - Introduction to Abstract Algebra I Credits: 3
- MAT 464 - Introduction to Abstract Algebra II Credits: 3
- MAT 465 - Theory of Numbers Credits: 3
- MAT 471 - Differential Geometry Credits: 3
- MAT 481 - Discrete Mathematics Credits: 3
- MAT 487 - Numerical Analysis Credits: 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.

## Minor: Medieval and Renaissance Studies

## OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** None

**Minimum Grade requirements for courses to count toward minor:** C-

**Contact Information:** Michael Grillo, Department of Art, 107 Lord Hall, (207) 581-3246; [michael.grillo@umit.maine.edu](mailto:michael.grillo@umit.maine.edu)

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

Students who elect this curriculum usually begin their exploration of the period through introductory courses, such as ARH 155, HON 111, HTY 105, or HTY 202, only one of which counts towards the total credits of the curriculum. Students are encouraged to take courses from all of its disciplines.

For complete information about Medieval and Renaissance Studies, visit the coordinator at 111 Carnegie Hall, phone (207) 581-3252 or contact Associate Professor Michael Grillo at [grillo@maine.edu](mailto:grillo@maine.edu).

### One Introductory Course (Total of 3 credits)

- ARH 155 - Art and Visual Culture in the Ancient and Medieval Worlds Credits: 3
- ARH 156 - Art and Visual Culture in the Modern Era Credits: 3
- ENG 231 - Western Tradition in Literature: Homer Through the Renaissance Credits: 3
- ENG 251 - English Literature Survey: Beginnings Through Neoclassicism Credits: 3
- HON 111 - Civilizations: Past, Present and Future I Credits: 4
- HON 112 - Civilizations: Past, Present and Future II Credits: 4
- HTY 105 - History of Ancient and Medieval Europe Credits: 3

### Five or more Upper Level Courses (minimum of 15 credits total)

#### Art History

- ARH 252 - Mediterranean Medieval Art and Architecture Credits: 3
- ARH 253 - Northern European Medieval Art and Architecture Credits: 3
- ARH 255 - Italian Renaissance Art Credits: 3
- ARH 257 - Northern Renaissance Art Credits: 3

- ARH 362 - Medieval Art and Architecture Seminar Credits: 3
- ARH 363 - Renaissance Art and Architecture Seminar Credits: 3
- ARH 493 - Medieval Research Seminar Credits: 3
- ARH 494 - Renaissance Research Seminar Credits: 3

## English

- ENG 253 - Shakespeare: Selected Plays Credits: 3
- ENG 351 - Medieval English Literature Credits: 3
- ENG 490 - Research Seminar in Literature Credits: 3

## History

- HTY 202 - Medieval Civilization Credits: 3
- HTY 398 - Historical Issues Credits: 3
- HTY 402 - Roman History Credits: 3
- HTY 403 - Early Middle Ages Credits: 3
- HTY 404 - Late Middle Ages Credits: 3
- HTY 405 - Early Modern Europe: Renaissance, Reformation and the Foundation of the Modern World-System Credits: 3
- HTY 423 - History of Russia I Credits: 3
- HTY 453 - History of Ireland I Credits: 3
- HTY 455 - History of Great Britain I Credits: 3
- HTY 498 - Senior Seminar in History Credits: 3

## Modern Languages and Classics

- FRE 390 - Topics in French Credits: 1-3
- GER 401 - Major Cultural Periods Credits: 3
- MLC 190 - Topics in Modern Languages Credits: 3
- MLC 231 - Western Tradition in Literature: Homer Through the Renaissance Credits: 3
- SPA 401 - Golden Age Credits: 3
- SPA 403 - Cervantes Credits: 3
- SPA 490 - Topics and Individual Authors in Spanish Credits: 1-3

## Political Science

- POS 302 - Medieval Political Thought Credits: 3
- POS 303 - Early Modern Political Thought Credits: 3

## Minor: Music

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 19

**GPA requirements to earn minor:** None.

**Minimum Grade requirements for courses to count toward minor:** C- or better.

**Contact Information:** Beth Wiemann, Chair, Class of 1944 Hall, 581-1244

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 some performing ensembles. Students must take a total of 19 credits.

### Requirements

**Music Theory and Literature (6 credits):**

- MUL 202 - The Art of Listening to Music: Historical Survey Credits: 3
- MUY 101 - Fundamentals of Music Credits: 3

**Music History (3 credits):**

- MUH 2XX

**Music Performance (4 credits):**

- MUO XXX  
and/or
- MUS XXX  
and/or
- MUE 2XX

**Music Electives (6 credits):**

- Any course with the MU prefix (MUE, MUH, MUL, MUO, MUP, MUS, MUY)
- To be selected in consultation with music minor faculty.

## Minor: Native American Studies

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** None.

**Minimum Grade requirements for courses to count toward minor:** 2.0 GPA in Native American Studies Courses

**Contact Information:** Darren Ranco, Chair of Native American Programs, 5724 Dunn Hall, 581-9485, darren.ranco@umit.maine.edu

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 with a focus on the Wabanaki Nations of Maine and the Maritimes. The importance and significance of the indigenous people are critical in understanding the settler nation-states 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.

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 better 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 the historical, economic, social and political forces that 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 Darren Ranco darren.ranco@umit.maine.ed, Chair of Native American Programs in Dunn Hall or call (207) 581-4450.

## These Requirements are:

- NAS 101 - Introduction to Native American Studies Credits: 3
- NAS 102 - Introduction to Wabanaki Culture, History and Contemporary Issues Credits: 3
- A class in Native American Studies at the 400 level Credits: 3

## 3 courses from the following: (9 credits)

- ANT 295 - American Indians and Climate Change Credits: 3
- ANT 372 - North American Prehistory Credits: 3
- ANT 451 - Native American Cultures and Identities Credits: 3
- HTY 220 - North American Indian History Credits: 3
- HTY 481 - Amerindians of the Northeast: A History Credits: 3
- NAS 201 - Topics in Native American Studies Credits: 1-3



- NAS 230 - Maine Indian History in the Twentieth Century Credits: 3
- NAS 270 - Native American Women Credits: 3
- NAS 295 - American Indians and Climate Change Credits: 3
- NAS 298 - Directed Study in Native American Studies Credits: 1-6
- NAS 401 - Advanced Topics in Native American Studies Credits: 3
- NAS 498 - Directed Study in Native American Studies Credits: 1-6
- WGS 270 - Native American Women Credits: 3

## Minor: Philosophy

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** 2.0

**Minimum Grade requirements for courses to count toward minor:** A grade of C- or better is required in any Philosophy courses counting towards minor.

**Contact Information:** Jessica Miller, Chair, Department of Philosophy, 5776 The Maples, (207) 581-3862, [jessica.miller@umit.maine.edu](mailto:jessica.miller@umit.maine.edu)

Philosophy minors must take at least 18 credits in Philosophy, with a minimum grade of "C-." At least 9 of those credits must be taken at the University of Maine. Minors may take a maximum of 6 credits at the 100-level.

All minors are required to take two of the following:

- PHI 200 - Problems in Recent Philosophy Credits: 3
- PHI 210 - History of Ancient Philosophy Credits: 3
- PHI 312 - History of Modern Philosophy Credits: 3

## Minor: Physics

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 21

**GPA requirements to earn minor:** 2.0 in the core and elective courses

**Contact Information:** David Clark, Department of Physics, 205 Bennett Hall, (207) 581-1040, [declark@maine.edu](mailto:declark@maine.edu)

This program is intended for students (except for physics and engineering physics majors) enrolled in an undergraduate degree program at the University of Maine. It requires a minimum of 21 credits and a minimum GPA of 2.0 in both the core and elective courses.

## Required Courses:

The Department Chairperson may consider exceptions to this list on a case-by-case basis.

- PHY 111 - General Physics I Credits: 4  
and
- PHY 112 - General Physics II Credits: 4  
or
- PHY 121 - Physics for Engineers and Physical Scientists I Credits: 4  
and
- PHY 122 - Physics for Engineers and Physical Scientists II Credits: 4
- PHY 223 - Special Relativity Credits: 1
- PHY 236 - Introductory Quantum Physics Credits: 3

## Three or more courses from the following list: (9 credits)

- PHY 224 - Special Relativity Laboratory Credits: 1 - 3
- PHY 238 - Mechanics Credits: 3
- PHY 447 - Molecular Biophysics Credits: 3 - 4
- PHY 454 - Electricity and Magnetism I Credits: 3
- PHY 462 - Physical Thermodynamics Credits: 3 - 4
- PHY 463 - Statistical Mechanics Credits: 3
- PHY 469 - Quantum and Atomic Physics Credits: 3
- PHY 470 - Nuclear Physics Credits: 2
- PHY 471 - Nuclear Physics Laboratory Credits: 1
- PHY 472 - Geometrical and Fourier Optics Credits: 3
- PHY 476 - Mathematical Methods in Physics Credits: 3
- PHY 480 - Physics of Materials Credits: 3

## Minor: Political Science

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor: 18**

**GPA requirements to earn minor: 2.0**

**Minimum Grade requirements for courses to count toward minor: C**

**Contact Information:** Mark D. Brewer, Professor and Interim Chair, 113A North Stevens Hall, (207) 581-1871, mark.brewer@umit.maine.edu

A minor in Political Science shall consist of at least 18 credits. Students are required to take POS 100 - American Government. 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. A maximum of 3 pre-approved internship/field experience credit hours can be used towards the minor. Students must earn grades of "C" or better in POS courses to count towards the minor.

## Minor: Political Theory

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** 2.0

**Minimum Grade requirements for courses to count toward minor:** C

**Residency Requirement:** A minimum of 9 Credit Hours must be completed at the University of Maine

**Students who are majoring in Political Science cannot declare "Political Theory" as their minor.**

**Contact Information:** Mark D. Brewer, Professor and Interim Chair, 113A North Stevens Hall, (207) 581-1871, mark.brewer@umit.maine.edu

The Minor in Political Theory engages students in systematic study of the philosophical underpinnings of our political world. Political theory is a field that engages students in the history of political thought and attempts to answer the question, "What do we want our political world to be?" In total, the courses offer an historical survey of the core ideas in political theory from Greek and Roman antiquity through to the present day. Students grapple with the contested meaning of foundational political concepts such as justice, democracy, inclusion, power, and legitimacy. Students also reflect upon and assess the worthiness of contemporary political systems, including their own, by examining competing conceptions of various ideal arrangements proposed by political philosophers over the millennia. Lastly, students examine the impact of political ideas upon monumental events in American political history and Western civilization generally.

In sum, students will learn to think critically about the ideas and philosophies that have shaped, and will continue to guide, contemporary political systems, gain the intellectual tools to become more informed and engaged democratic citizens, and it is hoped, more thoughtful and considerate human beings.

## Courses

- POS 201 - Introduction to Political Theory Credits: 3  
(This course is normally the prerequisite for 300-400 level courses, but may be waived with permission of the instructor; without POS 201, the only prerequisite for the upper-level political theory courses is Junior/Senior status)
- POS 301 - Classical Political Thought Credits: 3
- POS 302 - Medieval Political Thought Credits: 3
- POS 303 - Early Modern Political Thought Credits: 3

- POS 304 - American Political Thought Credits: 3
- POS 305 - Late Modern Political Thought Credits: 3
- POS 306 - Crafting the American Constitution Credits: 3
- POS 307 - Democratic Theory Credits: 3
- POS 309 - Topics in Political Theory Credits: 3
- POS 355 - Music and Politics in the American Context Credits: 3
- POS 401 - Seminar in Political Theory Credits: 3
- POS 486 - Religious Thought, the American Identity, and U.S. Public Policy Credits: 3
- POS 493 - American Politics Internship Credits: 3, 6 or 9  
or
- POS 495 - Congressional Internship Credits: 6 or 9  
or
- POS 496 - International Affairs Internship Credits: 6 or 9  
(Choose no more than 3 pre-approved Internship credits)
- POS 499 - Senior Seminar in Political Science Credits: 3  
(Sections with theory focus only)

## **Minor: Professional Languages**

# **OVERVIEW OF DEGREE REQUIREMENTS**

**Minimum number of credits required to earn minor:** 18

**Requirements to earn minor:** 9 credits in French and 9 credits in Spanish

**Minimum Grade requirements for courses to count toward minor:** None

**Contact Information:** Jane Smith, Chair, Modern Languages and Classics, 201 Little Hall, 581-2075

Be better prepared for the global job market of the 21 century. The minor in Professional Languages is intended for students who would like to develop intermediate or advanced proficiency in French and Spanish, including knowledge of the fundamentals of business-related communication and practices in several of the countries in which French (54 countries) and Spanish (44 countries) are spoken.

Credits can be counted toward the minor starting at the intermediate level (FRE 201/202 or 218; SPA 203/204 or 217) or higher.

## **Required Courses**

- FRE 307 - French for Business Credits: 3
- SPA 309 - Spanish for the Professions Credits: 3

## **Minor: Professional Writing**

## OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** 2.0

**Minimum Grade requirements for courses to count toward minor:** A "C-" or better is required in all Professional Writing Minor courses.

**Contact Information:** Charlsye Diaz, Coordinator of Professional Writing, 305 Neville Hall, 581-3839, charlsye\_diaz@umit.maine.edu

Students from all fields of study can add a professional credential to a degree by studying the kinds of writing that will be important to their professions. Courses in the minor enable students to analyze audiences and writing situations and to write persuasively in professional contexts. Students learn to develop newsletters, to write reports and proposals, and to prepare other paper and electronic texts in corporate and nonprofit settings. Students also may learn to prepare operating manuals, instructions, specifications, and other technical documents.

### Required Courses (3 Courses / 9 Credits)

- ENG 212 - Persuasive and Analytical Writing Credits: 3
- ENG 415 - Advanced Report & Proposal Writing Credits: 3
- ENG 317 - Business and Technical Writing Credits: 3

### Electives (9 Credits)

- CMJ 236 - Journalism Writing and Editing Credits: 3
- ENG 309 - Writing Creative Nonfiction Credits: 3
- ENG 315 - Research Writing in the Disciplines Credits: 3
- ENG 395 - English Internship Credits: 3
- ENG 416 - Technical Editing & Document Design Credits: 3
- ENG 418 - Topics in Professional Writing Credits: 3
- ENG 496 - Field Experience in Professional Writing Credits: 1-6
- NMD 206 - Project Design Workshop I Credits: 3

## Minor: Psychology

## OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** 2.0

**Minimum Grade requirements for courses to count toward minor:** "C-" or better

**Contact Information:** Michael A. Robbins, Chair, Department of Psychology, 301 Little Hall, (207) 581-2033

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 9 psychology credits must be taken at the University of Maine. All transfer courses applied to the minor must be approved by the Department of Psychology.

## **Minor: Religious Studies**

# **OVERVIEW OF DEGREE REQUIREMENTS**

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** None.

**Minimum Grade requirements for courses to count toward minor:** Religious Studies minors must earn a minimum grade of "C" or better in all courses used for the minor.

**Contact Information:** Henry Munson, Coordinator, Professor of Anthropology, 5773 S. Stevens Hall, Room 106A, 207-581-1894, fax number: 581-1823 [henry.munson@umit.maine.edu](mailto:henry.munson@umit.maine.edu)

Religion has existed in all human cultures and continues to play an important role in most societies and in many conflicts. The Religious Studies curriculum is designed to help students understand these facts, regardless of whether they are themselves religious or not.

## **Requirements**

A minor in Religious Studies shall consist of at least 18 credit hours, of which at least 9 must be upper-level (300 and 400-level) courses. Students must achieve a grade of "C" or better in all courses used for the Religious Studies minor. All Religious Studies students must take at least one course in a discipline other than Anthropology or Philosophy.

Religious Studies students must take at least three courses in Category I (Courses with a primary focus on religion), and at least one course in Category II (Courses that focus on religion to a significant degree). Students can also request permission from the minor coordinator to receive credit for "Topics" courses with a primary focus on religion.

## **Required Courses**

- ANT 120 - Religions of the World Credits: 3
- PHI 105 - Introduction to Religious Studies Credits: 3

## Category I: Courses with a primary focus on religion

- ANT 249 - Religion and Violence Credits: 3
- ANT 261 - Islamic Fundamentalism Credits: 3
- ANT 469 - Theories of Religion Credits: 3
- ANT 470 - Religion and Politics Credits: 3
- CLA 202 - Mythology of the Ancient Near East, North African and Greece Credits: 3
- HTY 433 - Greek and Roman Mythology Credits: 3
- JST 200 - Introduction to Judaism Credits: 3
- PAX 350 - Buddhism, Peace and Contemplative Traditions Credits: 3
- PAX 400 - Martin Luther King and the Promise of Social Renewal Credits: 3
- PHI 223 - Modern Jewish Thought Credits: 3
- PHI 286 - Religions and Philosophies of the East: Hinduism Credits: 3
- PHI 287 - Religions and Philosophies of the East: Buddhism Credits: 3
- PHI 346 - The Philosophy of Mahatma Gandhi Credits: 3
- PHI 364 - Views of Self: East and West Credits: 3
- PHI 382 - Theories of Myth Credits: 3
- POS 302 - Medieval Political Thought Credits: 3
- POS 386 - Religion and Politics in the United States Credits: 3
- POS 486 - Religious Thought, the American Identity, and U.S. Public Policy Credits: 3
- SOC 482 - The Sociology of Religion Credits: 3

## Category II: Courses that focus on religion to a significant degree

- ANT 256 - Ethnic Conflict Credits: 3
- ANT 451 - Native American Cultures and Identities Credits: 3
- ANT 454 - Cultures and Societies of the Middle East Credits: 3
- ARH 252 - Mediterranean Medieval Art and Architecture Credits: 3
- ARH 253 - Northern European Medieval Art and Architecture Credits: 3
- ARH 255 - Italian Renaissance Art Credits: 3
- ARH 257 - Northern Renaissance Art Credits: 3
- ARH 258 - Baroque Art and Architecture Credits: 3
- ARH 362 - Medieval Art and Architecture Seminar Credits: 3
- ARH 363 - Renaissance Art and Architecture Seminar Credits: 3
- ARH 492 - Baroque Research Seminar Credits: 3
- ARH 493 - Medieval Research Seminar Credits: 3
- ARH 494 - Renaissance Research Seminar Credits: 3
- CLA 201 - Women in the Ancient World Credits: 3
- CLA 400 - Hero: Myth and Meaning Credits: 3

- HBR 101 - Beginning Modern Hebrew Credits: 3
- HBR 102 - Beginning Modern Hebrew II Credits: 3
- HTY 398 - Historical Issues Credits: 3
- HTY 401 - History of Greece Credits: 3
- HTY 402 - Roman History Credits: 3
- HTY 403 - Early Middle Ages Credits: 3
- HTY 404 - Late Middle Ages Credits: 3
- HTY 341 - The Making of Modern China Credits: 3
- HTY 437 - History of Modern Japan Credits: 3
- JST 203 - Jewish History and Culture I: The Middle Ages to 1750 Credits: 3
- JST 204 - Jewish History and Culture II: The Jews & Europe, 1750-1948 Credits: 3
- MUL 101 - The Art of Listening to Music: Elements Credits: 3
- MUL 120 - World Music Credits: 3
- MUL 202 - The Art of Listening to Music: Historical Survey Credits: 3
- PAX 351 - This Sacred Earth: Ecology and Spirituality Credits: 3
- PAX 491 - Forgiveness: Creating a Culture of Peace and Reconciliation Credits: 3

## Minor: Sociology

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** 2.0

**Minimum Grade requirements for courses to count toward minor:** No courses for the Sociology minor may be taken pass/fail.

**Contact Information:** Amy Blackstone, Chair, 201D Fernald Hall, 581-2392, [amy.blackstone@umit.maine.edu](mailto:amy.blackstone@umit.maine.edu)

At least 9 credits must be taken at UMaine

- SOC 101 - Introduction to Sociology Credits: 3
- Any level Sociology Electives Credits: 6
- 300-400 level Sociology electives Credits: 9
- NOTE: SOC 310 can not be counted as an elective towards this minor

## Minor: Spanish



## OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** None.

**Minimum Grade requirements for courses to count toward minor:** None.

**Contact Information:** Jane Smith, Chair of MLC, 201 Little Hall, (207) 581-2075, jsmith@maine.edu

The requirements for a minor in Spanish are a minimum of 18 credits in the language, 12 of which must be above the intermediate level. For more information and a list of available courses, please contact the Department of Modern Languages and Classics in 201 Little Hall, (207) 581-2072 or (207) 581-2075.

## Minor: Statistics

## OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 19 or 20 (depending on option)

**Minimum Cumulative GPA required to earn minor:** 2.0

**Minimum Grade requirements for courses to count toward minor:** C

**Other GPA requirements to earn minor:** None

**Other course requirements:** Prerequisites: MAT 126 and MAT 127

**Contact Information:** Pushpa Gupta, 321 Neville Hall, (207)581-3914; puspha.gupta@umit.maine.edu

There is a growing demand from many areas for graduates who have at least some statistics on their resume. This is evidenced in the very large number of majors (from CLAS, NSFA, College of Engineering, and others) who require specific courses. The proposed minor in statistics allows student students, and others, to obtain a very attractive addition to their qualifications through a relatively small number of credits in addition to the requirements for their major.

### Required Mathematics Course:

- MAT 228 - Calculus III Credits: 4

### Required Statistics Courses:

- MAT 435 - Introduction to Mathematical Statistics Credits: 3

**Either**

- STS 332 - Statistics for Engineers Credits: 3
- or**
- STS 434 - Introduction to Statistics Credits: 4  
or an approved equivalent course in statistics

Any three of the following statistics courses:

- STS 436 - Nonparametric Statistics Credits: 3
  - STS 437 - Statistical Methods in Research Credits: 3
  - MAT 531
  - MAT 532
  - MAT 533
  - MAT 535
  - MAT 536
  - MAT 537
  - MAT 538
  - MAT 539
- (See Graduate Catalog for Graduate course descriptions)
- Other approved courses, as available.

## Minor: Studio Art

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor: 21**

**GPA requirements to earn minor: 2.0**

**Minimum Grade requirements for courses to count toward minor:** Students must have a "C - "

**Contact Information:** Michael Grillo, Associate Professor of Art and Chair Department of Art; 5743 Lord Hall, Room 107; (207) 581-3246, michael.grillo@umit.maine.edu

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.

### Required Courses:

- ARH 155 - Art and Visual Culture in the Ancient and Medieval Worlds Credits: 3
- or**

- ARH 156 - Art and Visual Culture in the Modern Era Credits: 3
- ART 100 - Drawing I Credits: 3
- ART 110 - 2-D Design Credits: 3
- ART 120 - 3-D Design Credits: 3
- ART 200 - Drawing II Credits: 3

## 6 Credits in the following Elective courses

- ART 220 - Sculpture I Credits: 3
- ART 230 - Painting I Credits: 3
- ART 240 - Printmaking I Credits: 3
- ART 270 - Digital Art I Credits: 3
- ART 320 - Sculpture II Credits: 3
- ART 330 - Painting II Credits: 3
- ART 340 - Printmaking II Credits: 3
- ART 370 - Digital Art IIA: 3D Modeling and Animation Credits: 3

## Minor: The Constitution and American Law

# OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 18

**GPA required to earn minor:** 2.0

**Minimum Grade requirements for courses to count toward minor:** C

**Residency Requirement:** A minimum of 9 Credit Hours must be completed at the University of Maine

**Contact Information:** Mark D. Brewer, Professor and Interim Chair, 113A North Sevens Hall, (207) 581-1871, mark.brewer@umit.maine.edu

**Students who are majoring in Political Science cannot declare "The Constitution and American Law" as their minor.**

This Minor will enable students to focus on the American Constitution and its implications, providing them with a systematic way to structure their studies of this critical aspect of American political life. With so much ill-informed discussion on the content and meaning of the Constitution among the larger public in contemporary public discourse, this Minor contributes to the larger public good as well as providing a sound academic foundation for the individual student. By deeply understanding our own Constitution and American law, students are much better positioned to understand not only the American political system, but those of other countries as well.

## Required

- POS 100 - American Government Credits: 3

## Elective Options

Choose at least five courses from the following list:

- POS 282 - Introduction to American Law Credits: 3
- POS 306 - Crafting the American Constitution Credits: 3
- POS 353 - The U.S. Congress Credits: 3
- POS 354 - The U.S. Presidency Credits: 3
- POS 359 - Topics in American Government Credits: 3  
(Specific section on "The Supreme Court Term")
- POS 383 - American Constitutional Law Credits: 3
- POS 384 - American Civil Liberties Credits: 3
- POS 484 - The American Constitution and Criminal Due Process Credits: 3
- POS 493 - American Politics Internship Credits: 3, 6 or 9  
or
- POS 495 - Congressional Internship Credits: 6 or 9  
(Choose no more than 3 pre-approved internship credits)
- POS 499 - Senior Seminar in Political Science Credits: 3  
(American Law or Constitution focus only)

## Minor: Theatre

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor: 18**

**GPA requirements to earn minor: 2.0**

**Minimum Grade requirements for courses to count toward minor: C**

**Contact Information:** Dan Bilodeau, Department Chair, 5788 Class of '44 Hall, 581-1962, [daniel.bilodeau@maine.edu](mailto:daniel.bilodeau@maine.edu)

The Theatre Minor is designed to provide the student with a basic foundation in Theatre. Students take a total of 18 credits, consisting of a core of 6 required credit hours in Stagecraft and Acting, plus 12 credit hours of Theatre Electives.

## Requirements

- THE 120 - Introduction to Stagecraft Credits: 3
- THE 121 - Introduction to Stagecraft Laboratory I Credits: 1
- THE 122 - Introduction to Stagecraft Laboratory II Credits: 1
- THE 269 - Theatre Practicum in Acting Credits: 1-3

An additional 12 credit hours of Theatre courses are required and can be chosen from the semester listing. Some courses have prerequisites and those must be met before the student can take them.

## Minor: Theatre Technology

# OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 20

**GPA requirements to earn minor:** 2.0

**Minimum Grade requirements for courses to count toward minor:** A C or better for any course to count toward the minor.

**Contact Information:** Dan Bilodeau, Department Chair, 5788 Class of '44 Hall, 581-1962, [daniel.bilodeau@maine.edu](mailto:daniel.bilodeau@maine.edu)

The Theatre Technology Minor is designed to provide the student with a basic foundation in technical theatre. Students take a total of 20 credits, consisting of a core of 17 required credit hours plus 3 credit hours of technical theatre electives. Students must complete 3 show assignments and achieve a minimum grade of C for any course to count towards the Theatre Technology Minor.

## Core Courses

- THE 120 - Introduction to Stagecraft Credits: 3
- THE 121 - Introduction to Stagecraft Laboratory I Credits: 1
- THE 122 - Introduction to Stagecraft Laboratory II Credits: 1
- THE 200 - Design for Performance Credits: 3
- THE 311 - Drafting for the Theatre Credits: 3
- THE 321 - Lighting Design Credits: 3
- THE 322 - Scene Painting Credits: 3

## Electives:

An additional 3 credit hours of technical courses from the list below are required and can be chosen from the semester listings.

- THE 312 - Technical Direction Credits: 3
- THE 313 - Stage Management Credits: 3

# Minor: Women's, Gender, and Sexuality Studies

## OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 18

**Minimum Grade requirements for courses to count toward minor:** 2.0

**GPA requirements to earn minor:** None.

**Contact Information:** Mazie Hough, Associate Director of the Women's, Gender, and Sexuality Studies Program, 581-1228.

The minor in Women's, Gender, and Sexuality Studies, approved in 1989, has been used to enhance a wide variety of majors in the College of Liberal Arts and Sciences (including a recent major in Physics.). A wide variety of students from programs in other colleges have also chosen the Women's, Gender and Sexuality Studies minor; the most common of these are Human Development and Family Studies, Social Work, Nursing, and the Bachelors of University Studies.

Besides the two core courses listed below there is a wide variety of courses that can be used for the remaining four electives, including internships or independent study. For lists of courses in addition to those below (both WGS courses and approved departmental electives) offered in a given semester, contact the WGS office, (207) 581- 1228 or visit our web site.

Mazie Hough and Elizabeth Neiman, Women's, Gender, and Sexuality Studies core faculty members, advise all the minors and approves transfer credit.

## Required Courses: (6 credits)

- WGS 101 - Women's, Gender and Sexuality Studies Credits: 3
- WGS 410 - Feminist, Gender and Queer Theory Credits: 3

## Electives: (12 credits)

The remaining 12 credits can be taken from among additional major core courses or Women's, Gender and Sexuality Studies Topics courses, internships, independent study courses, or courses taken at other universities in the U.S. or abroad.

## Non-Degree Certificates

### Certificate of Proficiency: French

Certificate requirements are any three courses in French above FRE 101 Elementary French I plus a Performance Assessment or Proficiency Assessment (Oral Proficiency Interview, Oral Proficiency Interview by computer), Writing Proficiency (WPT), or Reading and Listening Proficiency Tests (RPT/LPT). The student may elect the assessment of their choosing. The assessment requires a fee paid to Language Testing International (fee varies depending on test(s) taken) and a proctoring fee of \$30 payable to the University of Maine. Credit by exam may not be counted toward the certificate of proficiency.

## **Certificate of Proficiency: Spanish**

Certificate requirements are any three courses in Spanish above SPA 101 Elementary Spanish I plus a Performance Assessment or Proficiency Assessment (Oral Proficiency Interview, Oral Proficiency Interview by computer), Writing Proficiency (WPT), or Reading and Listening Proficiency Tests (RPT/LPT). The student may elect the assessment of their choosing. The assessment requires a fee paid to Language Testing International (fee varies depending on test(s) taken) and a proctoring fee of \$30 payable to the University of Maine. Credit by exam may not be counted toward the certificate of proficiency.

# College of Natural Sciences, Forestry & Agriculture

It's one thing to learn about the natural world in a classroom. It's another thing entirely to learn about it in this classroom. At the University of Maine, woods, lakes, rivers and streams surround our campus. The Atlantic Ocean and the Appalachian Trail are in our backyard. Our students learn about bear behavior by actually visiting a den and tagging cubs. They immerse themselves in the marine sciences on Maine's rocky shores and in tidal coves. But the great outdoors is only part of the appeal. At UMaine, the great indoors is equally impressive. The College of Natural Sciences, Forestry, and Agriculture offers a wide variety of lab-intensive majors and state-of-the-art teaching facilities. Comprehensive academic offerings, close advising, outstanding research opportunities, high placement rates and strong relationships with leading research institutes and top medical schools make UMaine a destination for health and biomedical studies. The region's largest hospital and leading biomedical research institutes are also nearby. The college offers a wide range of programs - from animal and veterinary sciences to zoology - and all the benefits of a comprehensive university, but our classes are small and you'll have the chance to really get to know your classmates, graduate students and faculty members within your major. If there were a perfect classroom, a perfect college experience, it would look like this.

## **ACADEMIC PROGRAMS:**

### *Bachelor of Arts in:*

Biology  
Botany  
Communication Sciences and Disorders  
Earth Sciences  
Economics  
Financial Economics  
Zoology

### *Bachelor of Science in:*

Animal and Veterinary Sciences  
Biochemistry  
Biology  
Botany  
Earth Sciences  
Ecology and Environmental Sciences  
Economics  
Environmental Horticulture  
Food Science and Human Nutrition  
Forest Operations, Bioproducts and Bioenergy  
Forestry  
Marine Science  
Medical Laboratory Sciences  
Microbiology  
Molecular and Cellular Biology  
Nursing  
Parks, Recreation and Tourism  
Social Work  
Sustainable Agriculture  
Wildlife Ecology



Zoology

*Minors:*

Animal and Veterinary Sciences  
Aquaculture  
Biochemistry  
Biology  
Botany  
Communication Sciences and Disorders  
Earth Sciences  
Ecology and Environmental Sciences  
Economics  
Environmental Horticulture  
Environmental Management and Policy  
Equine Studies  
Fisheries  
Food Science  
Forest Ecosystem Science  
Forest Products  
Forest Recreation Management  
Human Nutrition  
Microbiology  
Molecular and Cellular Biology  
Neuroscience  
Parks, Recreation and Tourism  
Plant Science  
Pre-medical Studies  
Renewable Energy Economics and Policy  
Renewable Energy Sciences and Technology  
Resource and Agribusiness Management  
Soil Science  
Sustainable Agriculture  
Sustainable Food Systems  
Zoology

**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 or 121 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 80 minors. These optional minors range from disciplines such as neuroscience, to various humanities and social sciences. Choosing a minor enables students to strengthen their preparation in the major by selecting supporting courses from a related discipline.

The University of Maine has an exchange program with the College of the Atlantic in which any degree-seeking undergraduate students enrolled at either institution are eligible to participate. For more information regarding this program contact the associate dean of the College of Natural Sciences, Forestry and Agriculture at 207-581-3206 or [george.criener@umit.maine.edu](mailto:george.criener@umit.maine.edu).

### **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.

### **Program Contacts**

#### *Animal and Veterinary Sciences*

Martin Stokes  
130A Hitchner Hall  
581-2770  
[martin.stokes@umit.maine.edu](mailto:martin.stokes@umit.maine.edu)

#### *Biochemistry*

Robert Gundersen  
117 Hitchner Hall  
581-2805  
[robert.gundersen@umit.maine.edu](mailto:robert.gundersen@umit.maine.edu)

#### *Biology*

Ann Dieffenbacher-Krall  
100 Murray Hall  
581-2510  
[ann.diffenbacher@umit.maine.edu](mailto:ann.diffenbacher@umit.maine.edu)

#### *Botany*

Ann Dieffenbacher-Krall  
100 Murray Hall  
581-2510  
[ann.diffenbacher@umit.maine.edu](mailto:ann.diffenbacher@umit.maine.edu)

#### *Communication Science and Disorders*

Allan B. Smith  
336 Dunn Hall  
581-2036  
[allan.b.smith@umit.maine.edu](mailto:allan.b.smith@umit.maine.edu)

#### *Earth Sciences*

Alice Kelley  
111 Bryand Global Sciences Center  
581-2056  
[alice.kelley@umit.maine.edu](mailto:alice.kelley@umit.maine.edu)

*Ecology and Environmental Sciences*

Julie Eubanks

246 Nutting Hall

581-3176

julie.eubanks@umit.maine.edu

*Economics*

Travis Blackmer

200 Winslow Hall

581-3155

travis.blackmer@umit.maine.edu

*Environmental Horticulture*

Jaina Young

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581-2948

jaina.young@umit.maine.edu

*Financial Economics*

Travis Blackmer

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581-3155

travis.blackmer@umit.maine.edu

*Food Science and Human Nutrition*

Mona Therrien

103 Hitchner Hall

581-3130

mona.therrien@umit.maine.edu

*Forest Operations, Bioproducts and Bioenergy*

William Livingston

201B Nutting Hall

581-2990

william.livingston@umit.maine.edu

*Forestry*

William Livingston

201B Nutting Hall

581-2990

william.livingston@umit.maine.edu

*Marine Science*

William Ellis

360B Aubert Hall  
581-4360  
wge@umit.maine.edu

*Medical Laboratory Sciences*

Seanna Annis

13 Deering Hall

581-2621  
sannis@maine.edu

*Microbiology*

Robert Gundersen  
117 Hitchner Hall  
581-2805  
robert.gundersen@umit.maine.edu

*Molecular and Cellular Biology*

Robert Gundersen  
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581-2805  
robert.gundersen@umit.maine.edu

*Nursing*

Catherine Berardelli  
201 Dunn Hall  
581-2588  
berardel@maine.edu

*Parks, Recreation and Tourism*

William Livingston  
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581-2990  
william.livingston@umit.maine.edu

*Social Work*

Kelly Jaksa  
101 Social Work Bldg  
581-2405  
kelly.jaksa@umit.maine.edu

*Sustainable Agriculture*

Jaina Young  
117 Deering Hall  
581-2948  
jaina.young@umit.maine.edu

*Undeclared*

Peter Reid  
2 Winslow Hall

581-3229  
peter.reid@umit.maine.edu

*Wildlife, Fisheries and Conservation Biology*  
Lindsay Seward

238 Nutting Hall

581-2847

lindsay.seward@umit.maine.edu

*Zoology*

Ann Dieffenbacher-Krall

100 Murray Hall

581-2510

ann.diffenbacher@umit.maine.edu

## Major

# Animal and Veterinary Sciences

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** A "C-" or higher is required for AVS 145, 249, 303, 346, 347, 349, 401, 402, 437, 455, 466 and 480.

**Other GPA requirements to graduate:** None.

**Required Course(s) for fulfilling Capstone Experience:** AVS 401 and AVS 402

**Contact Information:** Martin Stokes, AVS Program Coordinator, 130A Hitchner Hall, (207)581-2770;  
martin.stokes@umit.maine.edu

The School of Food and Agriculture offers the Bachelor of Science degree in Animal and Veterinary Sciences. The animal sciences curriculum is designed to provide a solid understanding of biological sciences along with specific expertise in the diseases, 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

The Animal Sciences degree is recommended for students who wish to pursue careers in animal agriculture, including the dairy, livestock, or equine industries or the other aspects of animal related research. This degree includes an undergraduate concentration in Pre-Veterinary Science, which is recommended for superior students who seek admission to veterinary college. 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. 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 school 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, dairy cattle, and Standard bred horses. 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.

### **BS in Animal and Veterinary Sciences (120 credits)**

Required Animal and Veterinary Science Courses (32 credits)

Student-selected AVS and Related Courses (10 credits)

Science and Mathematics Courses (32 credits)

Human Values and Social Context Courses (18 credits)

Career Enhancement (18 credits)

English Courses (6 credits)

NFA 117 - Issues and Opportunities (1 credit)

General Elective Courses (3 credits)

### **BS in Animal and Veterinary Sciences with Pre-Veterinary concentration (120 credits)**

Required Animal and Veterinary Science Courses (32 credits)

Student-selected AVS and Related Courses (3 credits)

Science and Mathematics Courses, including Vet School requirements (60 credits)

Human Values and Social Context Courses (18 credits)

English Courses (6 credits)

NFA 117 - Issues and Opportunities (1 credit)

### **Career Enhancement Electives**

With the aid of their academic advisor, the student selects 18 credits of elective classes, or a minor program of study, that will help build knowledge and skills in preparation for a future career.

## **Required Courses in Suggested Sequence for the B.S. in Animal and Veterinary Sciences**

### **First Year - First Semester**

- AVS 145 - Animal Science Credits: 4
- BIO 100 - Basic Biology Credits: 4
- CHY 121 - Introduction to Chemistry Credits: 3

- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- MAT 122 - Pre-Calculus Credits: 4
- NFA 117 - Issues and Opportunities Credits: 1

## First Year - Second Semester

- BIO 200 - Biology of Organisms Credits: 4
- CHY 122 - The Molecular Basis of Chemical Change Credits: 3
- CHY 124 - The Molecular Basis of Chemical Change Laboratory Credits: 1
- ENG 101 - College Composition Credits: 3
- STS 232 - Principles of Statistical Inference Credits: 3
- Human Values and Social Context Elective Credits: 3

## Second Year - First Semester

- AVS 249 - Laboratory and Companion Animal Science Credits: 2
- AVS 346 - Dairy Cattle Technology Credits: 3
- AVS 303 - Equine Management Cooperative Credits: 2
- OR
- AVS 347 - Dairy Cattle Technology Laboratory Credits: 2
- BIO 377 - Medical Physiology Credits: 3
- Career Enhancement Elective Credits: 3

## Second Year - Second Semester

- AVS 303 - Equine Management Cooperative Credits: 2
- OR
- AVS 347 - Dairy Cattle Technology Laboratory Credits: 2
- CMJ 103 - Fundamentals of Public Communication Credits: 3
- ECO 254 - Small Business Economics and Management Credits: 3
- Career Enhancement Elective Credits: 3

## Third Year - First Semester

- AVS 455 - Animal Nutrition Credits: 4
- ENG 315 - Research Writing in the Disciplines Credits: 3
- OR
- ENG 317 - Business and Technical Writing Credits: 3
- Career Enhancement Elective Credits: 3
- Human Values and Social Context Elective Credits: 3

## Third Year - Second Semester

- AVS 349 - Livestock Management Credits: 3
- AVS 437 - Animal Diseases Credits: 3
- BIO 350 - Concepts and Applications of Genetics Credits: 3
- Career Enhancement Elective Credits: 3

## Fourth Year - First Semester

- AVS 401 - Senior Paper in Animal Science I Credits: 2
- AVS 480 - Physiology of Reproduction Credits: 3
- Career Enhancement Elective Credits: 3
- Human Values and Social Context Elective Credits: 6

## Fourth Year - Second Semester

- AVS 402 - Senior Paper in Animal Science II Credits: 2
- AVS 466 - Livestock Feeds and Feeding Credits: 2
- Career Enhancement Elective Credits: 3
- Human Values and Social Context Elective Credits: 3
- General Elective Credits: 3

Complete during second through fourth years:

## Non-Ruminant Species

Choose at least **3 credits** in this section:

- AVS 196 - Introduction to Equine Cooperative Credits: 0-1
- AVS 203 - Equine Management Credits: 3
- AVS 211 - Introduction to Aquaculture Credits: 3
- AVS 243 - Centered Riding Principles of Equitation Credits: 3
- AVS 253 - Principles of Western Riding Credits: 3

## Career-Related Experience

Choose at least **4 credits** in this section:

- AVS 371 - University Dairy Cooperative Credits: 4
- AVS 396 - Field Experience in Animal and Veterinary Science Credits: 1 - 16
- AVS 397 - Equine Internship Credits: 1-4



## Advanced Topics

Choose at least **3 credits** in this section:

- AVS 353 - Equine Reproduction and Breeding Management Credits: 3
- AVS 393 - Training the Standardbred Horse Credits: 3
- AVS 405 - Livestock and Companion Animal Behavior Credits: 3
- AVS 433 - Equine Exercise Physiology Credits: 3

Note:

NOTE: The Ethics requirement will be satisfied by completing AVS 145, AVS 249, AVS 346 and AVS 349.

## Required Courses in Suggested Sequence for the B.S. in Animal and Veterinary Sciences (Pre-Veterinary Concentration)

### First Year - First Semester

- AVS 145 - Animal Science Credits: 4
- BIO 100 - Basic Biology Credits: 4
- CHY 121 - Introduction to Chemistry Credits: 3
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- MAT 126 - Calculus I Credits: 4
- NFA 117 - Issues and Opportunities Credits: 1

### First Year - Second Semester

- BIO 200 - Biology of Organisms Credits: 4
- CHY 122 - The Molecular Basis of Chemical Change Credits: 3
- CHY 124 - The Molecular Basis of Chemical Change Laboratory Credits: 1
- ENG 101 - College Composition Credits: 3
- Human Values and Social Context Elective Credits: 3

### Second Year - First Semester

- AVS 249 - Laboratory and Companion Animal Science Credits: 2
- AVS 346 - Dairy Cattle Technology Credits: 3
  
- AVS 303 - Equine Management Cooperative Credits: 2
- **OR**
- AVS 347 - Dairy Cattle Technology Laboratory Credits: 2

- BIO 377 - Medical Physiology Credits: 3
- PHY 111 - General Physics I Credits: 4

## Second Year - Second Semester

- AVS 303 - Equine Management Cooperative Credits: 2
- **OR**
- AVS 347 - Dairy Cattle Technology Laboratory Credits: 2
- CMJ 103 - Fundamentals of Public Communication Credits: 3
- ECO 254 - Small Business Economics and Management Credits: 3
- PHY 112 - General Physics II Credits: 4
- STS 232 - Principles of Statistical Inference Credits: 3

## Third Year - First Semester

- AVS 455 - Animal Nutrition Credits: 4
- BMB 300 - General Microbiology Credits: 3
- BMB 305 - General Microbiology Laboratory Credits: 2
- CHY 251 - Organic Chemistry I Credits: 3
- CHY 253 - Organic Chemistry Laboratory I Credits: 2
- ENG 315 - Research Writing in the Disciplines Credits: 3
- **OR**
- ENG 317 - Business and Technical Writing Credits: 3

## Third Year - Second Semester

- AVS 349 - Livestock Management Credits: 3
- AVS 437 - Animal Diseases Credits: 3
- BMB 322 - Biochemistry Credits: 3
- BMB 323 - Biochemistry Laboratory Credits: 2
- CHY 252 - Organic Chemistry II Credits: 3
- CHY 254 - Organic Chemistry Laboratory II Credits: 2

## Fourth Year - First Semester

- AVS 401 - Senior Paper in Animal Science I Credits: 2
- AVS 480 - Physiology of Reproduction Credits: 3
- BIO 462 - Principles of Genetics Credits: 3
- Human Values and Social Context Elective Credits: 6

## Fourth Year - Second Semester

- AVS 402 - Senior Paper in Animal Science II Credits: 2
- AVS 466 - Livestock Feeds and Feeding Credits: 2
- Human Values and Social Context Elective Credits: 6

Complete during second through fourth years:

## Advanced Topics

Choose at least **3 credits** in this section:

- AVS 353 - Equine Reproduction and Breeding Management Credits: 3
- AVS 393 - Training the Standardbred Horse Credits: 3
- AVS 405 - Livestock and Companion Animal Behavior Credits: 3
- AVS 433 - Equine Exercise Physiology Credits: 3

Note:

The Ethics requirement will be satisfied by completing AVS 145, AVS 249, AVS 346 and AVS 349.

# Biochemistry

## OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** For the Biochemistry major, a "C or better" is required in "Introduction to Molecular and Cellular Biology" (BMB 280) to continue in the required, upper-level BMB courses.

**Other GPA requirements to graduate:** The Biochemistry major requires a minimum GPA of 2.0 for all required BMB courses and science electives.

**Required Course(s) for fulfilling Capstone Experience:** BMB 491

**Contact Information:** Robert Gundersen, Chair, Hitchner Hall Room 117, (207) 581-2802, gundersn@maine.edu  
OR John Singer, Undergraduate Coordinator, Hitchner Hall, Room 280, (207) 581-2808, jsinger@maine.edu

The Department of Molecular and Biomedical Sciences offers a Bachelor of Science (BS) degree program in Biochemistry. The program is designed to provide the student with a broad background in the biological and physical sciences and an opportunity

for in depth concentration in biochemistry, one of the most active disciplines in the biological sciences.

**Departmental Requirements:**

Cumulative grade point average of 2.0 in the major and a minimum grade of C in BMB 280.

**Hands-on Experience:**

An important aspect of the Biochemistry undergraduate program 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 advanced laboratory courses 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 are important and mutually beneficial to the student and the faculty. Because the Department also offers M.S. and Ph.D. programs in the areas of biochemistry, microbiology, and molecular and cellular 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 will 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. Opportunities to earn academic credits while working off-campus in industry, hospitals, and research institutes also exist.

**Facilities:**

The departmental facilities for teaching and research are located in Hitchner Hall. The building contains a modern facility for teaching and research in biochemistry, including specialized equipment and laboratories for teaching molecular biology, virology, pathogenic microbiology, and animal cell culture. The University's Automated DNA Sequencing Facility and the department's Zebrafish Facility are also located 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 are exceptionally numerous and varied. A career in biochemistry 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. Biochemistry is at the core of the rapidly expanding fields of biotechnology, molecular biology and the allied health professions. Graduates of this program 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 provides an ideal preparation for further study in medical, dental, veterinary and other health-related professional schools. Students interested in these careers are encouraged to register with the Health Professions Office in their first year. The office provides information and assistance in selecting proper supporting courses and the application process.

**Accelerated UM/UNECOM Binary Degree Program with a B.S. in Biochemistry**

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 Biochemistry 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.

## Required Courses in Suggested Sequence for the B.S. in Biochemistry

### First Year - First Semester

- BIO 100 - Basic Biology Credits: 4
- CHY 121 - Introduction to Chemistry Credits: 3
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- ENG 101 - College Composition Credits: 3
- MAT 126 - Calculus I Credits: 4
- NFA 117 - Issues and Opportunities Credits: 1

### First Year - Second Semester

- BIO 200 - Biology of Organisms Credits: 4
- BMB 280 - Introduction to Molecular and Cellular Biology Credits: 3
- CHY 122 - The Molecular Basis of Chemical Change Credits: 3
- CHY 124 - The Molecular Basis of Chemical Change Laboratory Credits: 1
- MAT 127 - Calculus II Credits: 4

### Second Year - First Semester

- BMB 300 - General Microbiology Credits: 3
- BMB 305 - General Microbiology Laboratory Credits: 2
- CHY 251 - Organic Chemistry I Credits: 3
- CHY 253 - Organic Chemistry Laboratory I Credits: 2
- General Education Requirements Credits: 6

### Second Year - Second Semester

- BMB 322 - Biochemistry Credits: 3
- BMB 323 - Biochemistry Laboratory Credits: 2
- CHY 252 - Organic Chemistry II Credits: 3
- CHY 254 - Organic Chemistry Laboratory II Credits: 2
- General Education Requirements Credits: 6

### Third Year - First Semester

- BMB 400 - Molecular Genetics Credits: 3
- BMB 464 - Analytical and Preparative Biochemical Laboratory Methods Credits: 4
- STS 232 - Principles of Statistical Inference Credits: 3
- PHY 111 - General Physics I Credits: 4

### Third Year - Second Semester

- BMB 460 - Advanced Biochemistry Credits: 3
- PHY 112 - General Physics II Credits: 4
- General Education Requirements Credits: 6
- Science Elective Credits: 3

### Fourth Year - First Semester

- BMB 467 - Physical Biochemistry Credits: 3
- BMB 491 - Biochemistry, Microbiology and Molecular Biology Research Credits: Ar
- BMB 582 - Seminar in Biochemistry Credits: 1 (see Graduate catalog for course description)
- Science Elective Credits: 4
- Electives Credits: 3

### Fourth Year - Second Semester

- BMB 491 - Biochemistry, Microbiology and Molecular Biology Research Credits: Ar
- BMB 582 - Seminar in Biochemistry Credits: 1 (see Graduate Catalog for description)
- Elective Credits: 6
- Science Elective Credits: 3

# Biology

## OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** Biology Majors must have a "C" or better in BIO 100 and BIO 200.

**Other GPA requirements to graduate:** Biology Majors require a cumulative 2.0 GPA in all courses in Biological Sciences Areas I-V, affiliated science, and math courses combined.

**Required Course(s) for fulfilling Capstone Experience:** BIO 388 or BIO 392 or BIO 402 or BIO 438 or BIO 447 or BIO 450 or BIO 463 or HON 499\*. See concentration curriculums for specific requirements.

\*The thesis topic must be in Biology and the thesis advisor should be in the School of Biology and Ecology.

**Contact Information:** Ann Dieffenbacher-Krall, Assistant Director of the School of Biology and Ecology, 100 Murray Hall, (207)581-2510, annd@maine.edu

### **Bachelor of Science or Bachelor of Arts**

The School of Biology and Ecology offers both B.S. and B.A. degrees in Biology. Both degrees provide a strong background in biological sciences. They have the same requirements in biological sciences and differ only in the level of chemistry, mathematics, and physics required. The B.S. requires more in depth study of chemistry, math, and physics while the B.A. requires more social sciences and humanities. The B.S. provides preparation for the health professions and graduate study while the B.A. ensures a broad liberal arts education and allows more flexibility for minors and double majors.

Biology B.S.

Biology B.A.

## Biology B.S.

The B.S. degree in Biology is offered by the School of Biology and Ecology. For information about areas of specialization and for an overview of our facilities, cooperative programs, and list of faculty in the School of Biology and Ecology, see our web site.

Students choosing Biology as a second major must complete the second major by selecting courses in Areas I-V that are not being used to satisfy the requirements of their first major.

Students majoring in Biology are not eligible for a minor or second major in Botany or Zoology because of extensive overlap in the requirements for these degrees.

Students majoring in Biology must complete an assessment exit exam in their last semester prior to graduating.

Students majoring in Biology must earn a score of 4 or 5 in order to receive advanced placement credit for BIO 100.

Students must complete a minimum of 12 credits originating from the University of Maine in Biological Sciences Areas I-V.

*Students wishing to transfer from other institutions or from another program within the University of Maine must have completed BIO 100: Basic Biology with a grade of C or better or have a cumulative GPA of 2.0 or better.*

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, environmental monitoring and regulation at state and federal levels, and private design and consulting.

Biology offers students many choices and allows them to tailor their programs to their interests. Students can choose from a wide range of courses covering all major areas of biology including cells and molecules, genetics and development, physiology, anatomy, evolution and biodiversity, and ecology and behavior. Each student works with an academic adviser in the faculty to develop a curriculum that best meets the student's goals and allows for exploration or specialization as desired. Students in their third and fourth years of study, who intend to pursue post-baccalaureate studies leading to advanced degrees, are strongly encouraged to include independent research under the guidance of a faculty member in their programs.

### **Biology Club**

Students majoring in Biology, Botany, Zoology, and Medical Laboratory Sciences(Medical Technology) 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.

### **Concentrations in the B.S. Degree in Biology**

Optional concentrations are available in:

- Pre-medical Studies
- Ecology

These concentrations are described in detail following the suggested sequence of courses for the B.S. in Biology

### **Accelerated Binary Degree Programs, including the B.S. Degree in Biology**

The University of Maine and the University of New England College of Osteopathic Medicine (UNECOM), New England College of Optometry (NECO) and Logan College of Chiropractic (LCC) cooperate in providing accelerated undergraduate curricula leading to consideration for early admission to the cooperating colleges. Students complete three years at the University of Maine and are awarded the B.S. in Biology upon the successful completion of the first year curriculum at UNECOM, NECO, or LCC. Contact the Office of Health Professions (207) 581-2587 for complete program details and a curriculum for the first three years.

### **Combined B.S. and M.S. degrees in Botany, Entomology, or Zoology**

These Four Plus programs allow highly dedicated students to earn both the B.S. and the M.S. degrees in five to six years. This allows the student to save time and reduces the cost of the M.S. degree. See our web site for details.

## **Basic Biological Sciences for the B.S. in Biology**

*Note: BIO 208 Anatomy and Physiology, BIO 222 Biology: The Living Science, and BIO 223 Biology: The Living Science Laboratory will not count towards the major for students majoring in Biology.*



- BIO 100 - Basic Biology Credits: 4
- BIO 200 - Biology of Organisms Credits: 4

## Biological Sciences Areas I-V for the B.S. in Biology

The following are minimum requirements for these 5 areas: 24 credits, 3 credits/area, four laboratory (L) courses and at least one animal (A) course and at least one plant (P) course from Areas III - V.

If BIO 438, BIO 447, BIO 450, or BIO 463 is taken as a capstone, it can satisfy the area in which it is listed and can count as a laboratory course (if labeled L) but cannot count towards the 24 credits required in Areas I-V.

### Area I. Cell and Molecular Biology

If only one course is selected from this area, it must be BMB 280 or BIO 480

- BIO 336 - Developmental Biology Credits: 4
- BIO 438 - Morphogenesis in Development and Disease Credits: 3
- BIO 441 - Microscopy Credits: 2
- BIO 450 - Histology Credits: 4
- BIO 474 - Neurobiology Credits: 3
- BIO 480 - Cell Biology Credits: 3
- BIO 483 - Cell Biology Laboratory Credits: 1
- BMB 280 - Introduction to Molecular and Cellular Biology Credits: 3
- BMB 300 - General Microbiology Credits: 3
- BMB 305 - General Microbiology Laboratory Credits: 2
- BMB 420 - Infectious Disease Credits: 3
- BMB 421 - Infectious Disease Laboratory Credits: 2
- L - BIO 336, BIO 450, BIO 483, BMB 305, BMB 421

### Area II. Genetics

- BIO 350 - Concepts and Applications of Genetics Credits: 3
- BIO 462 - Principles of Genetics Credits: 3
- BMB 400 - Molecular Genetics Credits: 3
- BMB 490 - Microbial Genetics Credits: 5
- L - BMB 490

### Area III. Physiology

- BIO 307 - Introduction to Neuroscience Credits: 3
- BIO 377 - Medical Physiology Credits: 3
- BIO 378 - Medical Physiology Laboratory Credits: 2
- BIO 452 - Plant Physiology Credits: 3
- BIO 479 - Endocrinology Credits: 3
- BIO 480 - Cell Biology Credits: 3

- BIO 483 - Cell Biology Laboratory Credits: 1
- BMB 430 - Bacterial Physiology Credits: 3
- BMB 431 - Bacterial Physiology Laboratory Credits: 1
- BMB 440 - Introductory Immunology Credits: 3
- BMB 441 - Introductory Immunology Laboratory Credits: 1
- SMS 485 - Comparative Animal Physiology Credits: 3
- P - BIO 452
- A - BIO 307, BIO 377, BIO 479, BMB 440, SMS 485
- L - BIO 378, BIO 483, BMB 431, BMB 441

#### Area IV: Biodiversity and Evolution

- BIO 310 - Plant Biology Credits: 4
- BIO 326 - General Entomology Credits: 4
- BIO 329 - Vertebrate Biology Credits: 3
- BIO 331 - Vertebrate Biology Laboratory Credits: 1
- BIO 335 - Human Anatomy Credits: 4
- BIO 342 - Plants in Our World Credits: 3
- BIO 353 - Invertebrate Zoology Credits: 4
- BIO 430 - Ecology and Systematics of Aquatic Insects Credits: 4
- BIO 432 - Biology of the Fungi Credits: 4
- BIO 433 - Mammalogy Credits: 4
- BIO 464 - Taxonomy of Vascular Plants Credits: 4
- BIO 465 - Evolution Credits: 3
- SFR 439 - Plant Anatomy Structure and Function Credits: 3
- SMS 373 - Marine and Freshwater Algae Credits: 4
- P - BIO 310, BIO 342, BIO 432, BIO 464, SFR 439, SMS 373
- A - BIO 326, BIO 329, BIO 335, BIO 353, BIO 430, BIO 433
- L - BIO 310, BIO 326, BIO 331, BIO 335, BIO 353, BIO 430, BIO 432, BIO 433, BIO 464, SFR 439, SMS 373

#### Area 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 Credits: 4
- BIO 319 - General Ecology Credits: 3
- BIO 327 - Introductory Applied Entomology Credits: 4
- BIO 354 - Animal Behavior Credits: 3
- BIO 355 - Animal Behavior Laboratory Credits: 2
- BIO 434 - Avian Biology and Ecology Credits: 3
- BIO 437 - Avian Biology and Ecology Laboratory Credits: 1
- BIO 447 - Experimental Ecology Credits: 4
- BIO 455 - Biological Invasions Credits: 4
- BIO 463 - River Ecology Credits: 4
- BIO 468 - Lake Ecology Credits: 3

- BIO 476 - Paleoecology Credits: 4
  - EES 140 - Soil Science Credits: 3
  - EES 141 - Soil Science Laboratory Credits: 1
  - EES 475 - Field Studies in Ecology Credits: 1-3
  - INT 482 - (SBE, PSE) Pesticides and the Environment Credits: 3
  - PSE 320 - Soil Organic Matter Management Credits: 3
  - PSE 457 - Plant Pathology Credits: 4
  - SMS 300 - Marine Ecology Credits: 3
  - WLE 200 - Ecology Credits: 3
  - WLE 201 - Ecology Laboratory Credits: 3
  - WLE 423 - Wetland Ecology and Conservation Credits: 4
- P - PSE 457  
 A - BIO 327, BIO 354, BIO 434  
 L - BIO 205, BIO 327, BIO 355, BIO 437, BIO 447, BIO 463, BIO 476, EES 141, EES 475, PSE 457, WLE 201, WLE 423

## Affiliated Sciences and Math for the B.S. in Biology

To complete your B.S. in Biology you must take courses in Chemistry, Mathematics, and Physics. Below we have outlined your options for completing each requirement.

### Required Courses

- CHY 121 - Introduction to Chemistry Credits: 3
- CHY 122 - The Molecular Basis of Chemical Change Credits: 3
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- CHY 124 - The Molecular Basis of Chemical Change Laboratory Credits: 1

### Organic Chemistry Option 1

- BMB 221 - Organic Chemistry Credits: 3  
with
  - BMB 222 - Laboratory in Organic Chemistry Credits: 1  
and
  - BMB 322 - Biochemistry Credits: 3  
with
  - BMB 323 - Biochemistry Laboratory Credits: 2
- Total Organic Chemistry Credits: 9**

### Organic Chemistry Option 2

- CHY 251 - Organic Chemistry I Credits: 3  
with
- CHY 253 - Organic Chemistry Laboratory I Credits: 2  
and

- BMB 322 - Biochemistry Credits: 3  
with
- BMB 323 - Biochemistry Laboratory Credits: 2  
**Total Organic Chemistry Credits: 10**

### Organic Chemistry Option 3

- CHY 251 - Organic Chemistry I Credits: 3  
with
- CHY 253 - Organic Chemistry Laboratory I Credits: 2  
and
- CHY 252 - Organic Chemistry II Credits: 3  
with
- CHY 254 - Organic Chemistry Laboratory II Credits: 2  
**Total Organic Chemistry Credits: 10**

### Mathematics

- MAT 126 - Calculus I Credits: 4  
and
- STS 232 - Principles of Statistical Inference Credits: 3  
**Total Mathematics Credits: 7**

### Physics Option 1

- PHY 111 - General Physics I Credits: 4  
with
- PHY 112 - General Physics II Credits: 4  
**Total Physics Credits: 8**

### Physics Option 2

- PHY 121 - Physics for Engineers and Physical Scientists I Credits: 4  
with
- PHY 122 - Physics for Engineers and Physical Scientists II Credits: 4  
**Total Physics Credits: 8**

## Courses in Suggested Sequence for the B.S. in Biology

### First Year - First Semester

- BIO 100 - Basic Biology Credits: 4
- CHY 121 - Introduction to Chemistry Credits: 3  
(Enrollment in CHY 121 requires readiness for MAT 122 or equivalent. Students who are not ready to take MAT 122 or its equivalent take CHY 121 in the second year.)  
**with**
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- ENG 101 - College Composition Credits: 3  
**or**
- General Education Requirement<sup>1</sup> Credits: 3
- MAT 122 - Pre-Calculus Credits: 4  
**or**
- MAT 126 - Calculus I Credits: 4
- NFA 117 - Issues and Opportunities Credits: 1

### First Year - Second Semester

- BIO 200 - Biology of Organisms Credits: 4
- CHY 122 - The Molecular Basis of Chemical Change Credits: 3  
**with**
- CHY 124 - The Molecular Basis of Chemical Change Laboratory Credits: 1
- ENG 101 - College Composition Credits: 3  
(If not taken in the first semester)
- General Education Requirement<sup>1</sup> Credits: 3-6  
**OR**
- MAT 126 - Calculus I Credits: 4  
(If not taken in the first semester)

### Second Year - First Semester

- STS 232 - Principles of Statistical Inference Credits: 3
- CHY 251 - Organic Chemistry I Credits: 3  
See Footnote 3  
**with**
- CHY 253 - Organic Chemistry Laboratory I Credits: 2  
See Footnote 3
- General Education Requirement or Elective Credits: 3
- Biological Sciences Area Choice Credits: 3-4  
See Footnote 2

## Second Year - Second Semester

- CHY 252 - Organic Chemistry II Credits: 3  
See Footnote 3  
**with**
- CHY 254 - Organic Chemistry Laboratory II Credits: 2  
See Footnote 3
- Biological Sciences Area Choice Credits: 3-4  
See Footnote 2
- General Education Requirement or Elective Credits: 6

## Third Year - First Semester

- PHY 111 - General Physics I Credits: 4  
See Footnote 4
- General Education Requirement or Elective Credits: 6
- Biological Sciences Area Choice Credits: 5-7  
See Footnote 2

## Third Year - Second Semester

- PHY 112 - General Physics II Credits: 4  
See Footnote 4
- General Education Requirement or Elective Credits: 6-9
- Biological Sciences Area Choice Credits: 3-4  
See Footnote 2

## Fourth Year - First Semester

- Biological Sciences Area Choice Credits: 4  
See Footnote 2
- Capstone or Elective Credits: 3  
See Footnote 5
- General Education Requirements or Electives Credits: 6-9

## Fourth Year - Second Semester

- Biological Sciences Area Choice Credits: 4-9

See Footnote 2

- Elective or Capstone Credits: 3

See Footnote 5

- General Education Requirements or Electives Credits: 6-9

## Footnotes

1. See the General Education requirements for all students at the University. If BIO 400 (Biological Sciences Writing Intensive) is used to satisfy the General Education 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 the 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. Alternatively, students may take BMB 221/222 and BMB 322/323, OR CHY 251/253 and BMB 322/323.
4. Alternatively, students may take PHY 121 and 122.
5. The General Education capstone experience may be completed with BIO 388, 392, 402, 438, 447, 450, 463, or HON 499.

## Concentration in Ecology

This concentration is intended for students interested in exposure to ecological principles within the context of a rigorous biological sciences curriculum. Students in this concentration must meet all of the requirements for the Biology B.S. degree. The concentration also includes WLE 220 Introduction to Statistical Ecology and a requirement for a course on environmental influences. A total of 29-35 credits are required to complete the concentration depending on the selections made for each of the requirements.

Specific requirements:

### 1. Affiliated Sciences and Math

- WLE 220 - Introduction to Ecological Statistics Credits: 4  
This course can substitute for STS 232 - Principles of Statistical Inference.

### 2. Area I. Cell and Molecular Biology

Free choice among Area I courses in the Biology curriculum. Credits: 3-4

### 3. Area II. Genetics

Free choice among Area II courses in the Biology curriculum. Credits: 3-5

### 4. Area III. Physiology

Free choice among Area III courses in the Biology curriculum. Credits: 3

## 5. Area IV. Biodiversity

Bio 465 Evolution is required plus 3 additional credits chosen from Area IV courses in the Biology curriculum. Credits: 6-7

## 6. Area V. Ecology and Behavior

BIO 319 or WLE 200 or SMS 300 is required, plus 3 additional credits chosen from the following courses: Credits 6-7

- BIO 205 - Field Natural History of Maine Credits: 4
- BIO 327 - Introductory Applied Entomology Credits: 4
- BIO 354 - Animal Behavior Credits: 3
- BIO 355 - Animal Behavior Laboratory Credits: 2
- BIO 434 - Avian Biology and Ecology Credits: 3
- BIO 437 - Avian Biology and Ecology Laboratory Credits: 1
- BIO 447 - Experimental Ecology Credits: 4
- BIO 455 - Biological Invasions Credits: 4
- BIO 463 - River Ecology Credits: 4
- BIO 468 - Lake Ecology Credits: 3
- BIO 476 - Paleoecology Credits: 4
- EES 475 - Field Studies in Ecology Credits: 1-3
- PSE 457 - Plant Pathology Credits: 4
- PSE 469 - Soil Microbiology Credits: 3
- SFR 457 - Tree Pests and Disease Credits: 3
- WLE 201 - Ecology Laboratory Credits: 3
- WLE 423 - Wetland Ecology and Conservation Credits: 4

## 7. Primary and Secondary Producers

Choose at least one course labeled A and one labeled P from Areas I-V in the Biology curriculum. These courses can also satisfy requirements in Areas I-V for the basic Biology major and so do not add to the number of credits needed beyond the basic Biology major.

## 8. Area VI. Environmental Influences

Three credits are required. Choose from these courses:

- EES 140 - Soil Science Credits: 3
- EES 141 - Soil Science Laboratory Credits: 1
- ERS 101 - Introduction to Geology Credits: 4
- ERS 102 - Environmental Geology of Maine Credits: 4
- ERS 108 - Beaches and Coasts Credits: 3
- INT 482 - (SBE, PSE) Pesticides and the Environment Credits: 3
- PSE 320 - Soil Organic Matter Management Credits: 3
- SFR 406 - Remote Sensing Image Interpretation and Forest Mapping Credits: 3

## 9. Field Experience



Choose at least one course from this list. This course can also satisfy one of the areas above.

- BIO 205 - Field Natural History of Maine Credits: 4
- BIO 355 - Animal Behavior Laboratory Credits: 2
- BIO 430 - Ecology and Systematics of Aquatic Insects Credits: 4
- BIO 437 - Avian Biology and Ecology Laboratory Credits: 1
- BIO 463 - River Ecology Credits: 4
- EES 475 - Field Studies in Ecology Credits: 1-3
- WLE 423 - Wetland Ecology and Conservation Credits: 4

## 10. Capstone

Choose one of these courses:

- BIO 388 - Research Capstone in Biology Credits: 1-3
- BIO 392 - Independent Study Capstone in Biology Credits: 1-3
- BIO 447 - Experimental Ecology Credits: 4
- BIO 463 - River Ecology Credits: 4
- HON 499 - Honors Thesis Credits: 3  
(Must be a topic in Biology and the thesis advisor should be in SBE)

## 11. Writing Requirement (students in the Honors program are exempt)

One course required. Choose from the following courses\*:

- ENG 212 - Persuasive and Analytical Writing Credits: 3
- ENG 317 - Business and Technical Writing Credits: 3

\*These courses satisfy the general education writing intensive requirement and so do not add to the number of credits needed beyond the basic Biology major.

## Concentration in Pre-medical Studies

This concentration is intended for students preparing for a career in medicine or one of the other health professions (dentistry, optometry, osteopathy, physician assistant, pharmacy, podiatry, veterinary medicine and other health-related fields). Students completing this concentration will be fully prepared for advanced studies in these fields. In addition to the required science and mathematics courses, the concentration also includes general education courses that are desired by many medical schools. The concentration allows for considerable choice in courses and provides valuable guidance to students and their advisors with regard to course selection in their major and in general education requirements.

### **Requirements for the concentration**

Students in the pre-medical studies concentration must meet all of the requirements for the BIO-BS.

Specific requirements:

### **Affiliated Sciences and Math**

Choose CHY 251-254 to meet the organic chemistry requirement.

## Area I. Cell and molecular biology

Choose at least one of the following courses:

*If only one course is chosen, it must be BMB 280 or BIO 480.*

- BIO 336 - Developmental Biology Credits: 4
- BIO 480 - Cell Biology Credits: 3
- BIO 483 - Cell Biology Laboratory Credits: 1
- BMB 280 - Introduction to Molecular and Cellular Biology Credits: 3
- BMB 300 - General Microbiology Credits: 3
- BMB 305 - General Microbiology Laboratory Credits: 2

## Area II. Genetics

- BIO 462 - Principles of Genetics Credits: 3

## Area III. Physiology

Choose at least one of these courses:

- BIO 377 - Medical Physiology Credits: 3
- BIO 378 - Medical Physiology Laboratory Credits: 2
- BIO 480 - Cell Biology Credits: 3
- BIO 483 - Cell Biology Laboratory Credits: 1
- BMB 440 - Introductory Immunology Credits: 3
- BMB 441 - Introductory Immunology Laboratory Credits: 1

## Area IV. Biodiversity

Choose at least one of these courses:

- BIO 329 - Vertebrate Biology Credits: 3
- BIO 335 - Human Anatomy Credits: 4

## Area V. Ecology and Behavior

Free choice among the Area V courses in the BIO-BS curriculum.

## Capstone

Choose one of these courses:

- BIO 388 - Research Capstone in Biology Credits: 1-3

- BIO 438 - Morphogenesis in Development and Disease Credits: 3
- BIO 450 - Histology Credits: 4
- HON 499 - Honors Thesis Credits: 3

## Other required courses

- BMB 322 - Biochemistry Credits: 3  
**with**
- BMB 323 - Biochemistry Laboratory Credits: 2 (Footnote 1)
- PSY 100 - General Psychology Credits: 3 (Footnote 2)
- SOC 101 - Introduction to Sociology Credits: 3 (Footnote 2)
- ENG 212 - Persuasive and Analytical Writing Credits: 3 (Footnote 3)
- Literature course: An English literature course at the 200 level or above (Footnote 4)
- PHI 235 - Biomedical Ethics Credits: 3 (Footnote 5)

Footnotes:

<sup>1</sup>Required by medical schools. If CHY 251-254 have been completed, BMB 323 can count as one of the four labs required in Areas I-V.

<sup>2</sup>Satisfies general education Social Contexts and Institutions.

<sup>3</sup>Satisfies general education Writing Intensive, not required for students completing HON 211 and HON 212.

<sup>4</sup>Satisfies a general education area depending on the course chosen. Not required for students completing HON 211 and 212.

<sup>5</sup>Satisfies general education requirements for Ethics, Western Cultural Tradition, and Social Contexts and Institutions.

## Recommended courses

- INT 200 - (SBE) Orientation to Health Professions Credits: 4
- BIO 208 - Anatomy and Physiology Credits: 4

## Notes

a. Inclusion of BIO 480, Cell Biology, is highly recommended. This course can only count in one area.

b. Physician assistant and pharmacy schools require two semesters of anatomy and physiology. This requirement can be met by combining BIO 208, Anatomy and Physiology, and BIO 377, 378 Medical physiology and lab OR by combining BIO 335, Human Anatomy, and BIO 377, 378 Medical physiology and lab. Check with the Health Professions Specialist for details of the program you want to pursue.

c. Students pursuing this concentration may want to consider a minor in Neuroscience, Chemistry, Psychology, or Business.

## Biology B.A.

The B.A. degree in Biology is offered by the School of Biology and Ecology. For information about areas of research and for an overview of our facilities, cooperative programs, and list of faculty in the School of Biology and Ecology, see our web site [www.sbe.umaine.edu/](http://www.sbe.umaine.edu/)

Students choosing Biology as a second major must complete the second major by selecting courses in Areas I-V that are not being used to satisfy the requirements of their first major.

Students majoring in Biology are not eligible for a minor or second major in Botany or Zoology because of extensive overlap in the requirements for these degrees.

Students majoring in Biology must complete an assessment exit exam in their last semester prior to graduating.

Students majoring in Biology must earn a score of 4 or 5 in order to receive advanced placement credit for BIO 100.

Students must complete a minimum of 12 credits originating from the University of Maine in Biological Sciences Areas I-V.

*Students wishing to transfer from other institutions or from another program within the University of Maine must have completed BIO 100: Basic Biology with a grade of C or better or have a cumulative GPA of 2.0 or better.*

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, environmental monitoring and regulation at state and federal levels, and private design and consulting.

Biology offers students many choices and allows them to tailor their programs to their interests. Students can choose from a wide range of courses covering all major areas of biology including cells and molecules, genetics and development, physiology, anatomy, evolution and biodiversity, and ecology and behavior. Each student works with an academic adviser in the faculty to develop a curriculum that best meets the student's goals and allows for exploration or specialization as desired. Students in their third and fourth years of study, who intend to pursue post-baccalaureate studies leading to advanced degrees, are strongly encouraged to include independent research under the guidance of a faculty member in their programs.

### **Bachelor of Science or Bachelor of Arts**

Both the B.S. and B.A. degrees in Biology provide a strong background in biological sciences. They have the same requirements in Biological Sciences and differ only in the level of chemistry, mathematics, and physics required. The B.S. requires more in depth study of chemistry, math, and physics while the B.A. requires more social sciences and humanities. The B.S. provides preparation for the health professions and graduate study while the B.A. ensures a broad liberal arts education and allows more flexibility for minors and double majors.

### **Optional Concentration in the B.A. degree in Biology**

Students may complete the basic B.A. in Biology or they may add the optional Ecology Concentration. This concentration is described in detail following the suggested sequence of courses for the B.A. in Biology.

### **Biology Club**

Students majoring in Biology, Botany, Zoology, and Medical Laboratory Sciences (Medical Technology) 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. in Biology**

*Note: BIO 208, Anatomy and Physiology, BIO 222 Biology: The Living Science and BIO 223 Biology: The Living Science Laboratory, will not count towards the major for students majoring in Biology.*

- BIO 100 - Basic Biology Credits: 4
- BIO 200 - Biology of Organisms Credits: 4

## Biological Sciences Areas I-V

The following are minimum requirements for these 5 areas: 24 credits, 3 credits/area, four laboratory (L) courses and at least one animal (A) course and at least one plant (P) course from Areas III - V.

If BIO 438, BIO 447, BIO 450, or BIO 463 is taken as a capstone, it can satisfy the area in which it is listed and can count as a laboratory course (if labeled L) but cannot count towards the 24 credits required in Areas I-V.

### I. Cell and Molecular Biology

If only one course is selected from this area, it must be BMB 280 or BIO 480.

- BIO 336 - Developmental Biology Credits: 4
- BIO 438 - Morphogenesis in Development and Disease Credits: 3
- BIO 441 - Microscopy Credits: 2
- BIO 450 - Histology Credits: 4
- BIO 474 - Neurobiology Credits: 3
- BIO 480 - Cell Biology Credits: 3
- BIO 483 - Cell Biology Laboratory Credits: 1
- BMB 280 - Introduction to Molecular and Cellular Biology Credits: 3
- BMB 300 - General Microbiology Credits: 3
- BMB 305 - General Microbiology Laboratory Credits: 2
- BMB 420 - Infectious Disease Credits: 3
- BMB 421 - Infectious Disease Laboratory Credits: 2
- L - BIO 336, BIO 450, BIO 483, BMB 305, BMB 421

### II. Genetics

- BIO 350 - Concepts and Applications of Genetics Credits: 3
- BIO 462 - Principles of Genetics Credits: 3
- BMB 400 - Molecular Genetics Credits: 3
- BMB 490 - Microbial Genetics Credits: 5
- L - BMB 490

### III. Physiology

- BIO 307 - Introduction to Neuroscience Credits: 3
- BIO 377 - Medical Physiology Credits: 3
- BIO 378 - Medical Physiology Laboratory Credits: 2
- BIO 452 - Plant Physiology Credits: 3
- BIO 479 - Endocrinology Credits: 3

- BIO 480 - Cell Biology Credits: 3
- BIO 483 - Cell Biology Laboratory Credits: 1
- BMB 430 - Bacterial Physiology Credits: 3
- BMB 431 - Bacterial Physiology Laboratory Credits: 1
- BMB 440 - Introductory Immunology Credits: 3
- BMB 441 - Introductory Immunology Laboratory Credits: 1
- SMS 485 - Comparative Animal Physiology Credits: 3
- P - BIO 452
- A - BIO 307, BIO 377, BIO 479, BMB 440, SMS 485
- L - BIO 378, BIO 483, BMB 431, BMB 441

#### IV. Biodiversity and Evolution

- BIO 310 - Plant Biology Credits: 4
- BIO 326 - General Entomology Credits: 4
- BIO 329 - Vertebrate Biology Credits: 3
- BIO 331 - Vertebrate Biology Laboratory Credits: 1
- BIO 335 - Human Anatomy Credits: 4
- BIO 342 - Plants in Our World Credits: 3
- BIO 353 - Invertebrate Zoology Credits: 4
- BIO 430 - Ecology and Systematics of Aquatic Insects Credits: 4
- BIO 432 - Biology of the Fungi Credits: 4
- BIO 433 - Mammalogy Credits: 4
- BIO 464 - Taxonomy of Vascular Plants Credits: 4
- BIO 465 - Evolution Credits: 3
- SFR 439 - Plant Anatomy Structure and Function Credits: 3
- SMS 373 - Marine and Freshwater Algae Credits: 4
- L - BIO 310, BIO 326, BIO 331, BIO 335, BIO 353, BIO 430, BIO 432, BIO 433, BIO 464, SFR 439, SMS 373
- A - BIO 326, BIO 329, BIO 335, BIO 353, BIO 430, BIO 433
- P - BIO 310, BIO 342, BIO 432, BIO 464, SFR 439, SMS 373

#### 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 Credits: 4
- BIO 319 - General Ecology Credits: 3
- BIO 327 - Introductory Applied Entomology Credits: 4
- BIO 354 - Animal Behavior Credits: 3
- BIO 355 - Animal Behavior Laboratory Credits: 2
- BIO 434 - Avian Biology and Ecology Credits: 3
- BIO 437 - Avian Biology and Ecology Laboratory Credits: 1
- BIO 447 - Experimental Ecology Credits: 4

- BIO 455 - Biological Invasions Credits: 4
- BIO 463 - River Ecology Credits: 4
- BIO 468 - Lake Ecology Credits: 3
- BIO 476 - Paleoecology Credits: 4
- EES 140 - Soil Science Credits: 3
- EES 141 - Soil Science Laboratory Credits: 1
- EES 475 - Field Studies in Ecology Credits: 1-3
- INT 482 - (SBE, PSE) Pesticides and the Environment Credits: 3
- PSE 320 - Soil Organic Matter Management Credits: 3
- PSE 457 - Plant Pathology Credits: 4
- SMS 300 - Marine Ecology Credits: 3
- WLE 200 - Ecology Credits: 3
- WLE 201 - Ecology Laboratory Credits: 3
- WLE 423 - Wetland Ecology and Conservation Credits: 4
- L - BIO 205, BIO 327, BIO 355, BIO 437, BIO 447, BIO 463, BIO 476, EES 141, EES 475, PSE 457, WLE 201, WLE 423
- A - BIO 327, BIO 354, BIO 434
- P - PSE 457

## Affiliated Sciences and Math for the B.A. in Biology

To complete your B.A. in Biology you must take courses in Chemistry, Mathematics, and Physics. Below we have outlined your options for completing each requirement.

### Required Courses

- CHY 121 - Introduction to Chemistry Credits: 3
- CHY 122 - The Molecular Basis of Chemical Change Credits: 3
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- CHY 124 - The Molecular Basis of Chemical Change Laboratory Credits: 1

### Organic Chemistry Option 1

- BMB 221 - Organic Chemistry Credits: 3
  - BMB 222 - Laboratory in Organic Chemistry Credits: 1
  - BMB 322 - Biochemistry Credits: 3
  - BMB 323 - Biochemistry Laboratory Credits: 2
- Total Organic Chemistry Credits: 9

### Organic Chemistry Option 2

- CHY 251 - Organic Chemistry I Credits: 3
- CHY 253 - Organic Chemistry Laboratory I Credits: 2
- BMB 322 - Biochemistry Credits: 3
- BMB 323 - Biochemistry Laboratory Credits: 2

Total Organic Chemistry Credits: 10

### Organic Chemistry Option 3

- CHY 251 - Organic Chemistry I Credits: 3
  - CHY 253 - Organic Chemistry Laboratory I Credits: 2
  - CHY 252 - Organic Chemistry II Credits: 3
  - CHY 254 - Organic Chemistry Laboratory II Credits: 2
- Total Organic Chemistry Credits: 10

### Mathematics

- MAT 126 - Calculus I Credits: 4  
OR
  - STS 232 - Principles of Statistical Inference Credits: 3
- Total Mathematics Credits: 3-4

### Physics Option 1

- PHY 105 - Descriptive Physics Credits: 4
  - PHY 112 - General Physics II Credits: 4
- Total Physics Credits: 8

### Physics Option 2

- PHY 111 - General Physics I Credits: 4
  - PHY 112 - General Physics II Credits: 4
- Total Physics Credits: 8

### Other Requirements

Students are required 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. In addition, the College of Natural Sciences, Forestry and Agriculture requires 27 credits of General Education courses in Human Values and Social Context for the B.A. and at least 12 of those credits must be at the 200 level or above.

### Courses in Suggested Sequence for the B.A. in Biology

#### First Year - First Semester

- BIO 100 - Basic Biology Credits: 4



- CHY 121 - Introduction to Chemistry Credits: 3  
Enrollment in CHY 121 requires readiness for MAT 122 or equivalent. Students who are not ready to take MAT 122 or its equivalent take CHY 121 in the second year.  
**with**
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- ENG 101 - College Composition Credits: 3  
**or**
- General Education Requirement<sup>1</sup> Credits: 3
- MAT 122 - Pre-Calculus Credits: 4
- NFA 117 - Issues and Opportunities Credits: 1

### First Year - Second Semester

- BIO 200 - Biology of Organisms Credits: 4
- CHY 122 - The Molecular Basis of Chemical Change Credits: 3
- CHY 124 - The Molecular Basis of Chemical Change Laboratory Credits: 1
- ENG 101 - College Composition Credits: 3
- If not taken in the first semester
- General Education Requirement<sup>1</sup> Credits: 3-6

### Second Year - First Semester

- BMB 221 - Organic Chemistry Credits: 3  
(see Footnote 3)
- BMB 222 - Laboratory in Organic Chemistry Credits: 1  
(see Footnote 3)
- STS 232 - Principles of Statistical Inference Credits: 3  
(see Footnote 4)
- Biological Sciences Area Choice Credits: 3  
(See Footnote 2)
- General Education Requirement or Elective Credits: 3
- International Perspective Credits: 3  
(See Footnote 5)

### Second Year - Second Semester

- Biological Sciences Area Choice<sup>2</sup> Credits: 3-5
- International Perspective<sup>5</sup> Credits: 3
- General Education Requirement for Elective Credits: 6-9

### Third Year - First Semester

- PHY 111 - General Physics I Credits: 4 (see Footnote 4)

- Biological Sciences Area Choice<sup>2</sup> Credits: 5-7
- General Education Requirement or Elective Credits: 6

### Third Year - Second Semester

- General Education Requirement or Elective Credits: 3-12
- Biological Sciences Area Choice<sup>2</sup> Credits: 3-4

### Fourth Year - First Semester

- Biological Sciences Area Choice<sup>2</sup> Credits: 3-4
- Capstone<sup>7</sup> Credits: 3
- General Education Requirements or Electives Credits: 7-10

### Fourth Year - Second Semester

- Biological Sciences Area Choice<sup>2</sup> Credits: 3-10
- General Education Requirements or Electives Credits: 4-12

### Footnotes

<sup>1</sup>See the General Education requirements for all students at the University. If BIO 400 (Biological Sciences Writing Intensive) is used to satisfy the General Education 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.

<sup>2</sup>See above lists of courses in the 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.

<sup>3</sup>Alternatively, students may take CHY 251/253 and BMB 322/323 or CHY 251/253 and CHY 252/254.

<sup>4</sup>Alternatively, students may take MAT 126.

<sup>5</sup>See Other Requirements above for ways to satisfy this requirement for the B.A. degree.

<sup>6</sup>Alternatively, students may take PHY 111 and 112.

<sup>7</sup>The General Education capstone experience may be completed with BIO 388, 392, 402, 438, 447, 450, 463, or HON 499.

## Concentration in Ecology

This concentration is intended for students interested in exposure to ecological principles within the context of a rigorous biological sciences curriculum. Students in this concentration must meet all of the requirements for the Biology B.A. degree. The concentration also includes WLE 220 Introduction to Statistical Ecology and a requirement for a course on environmental influences. A total of 29-35 credits are required to complete the concentration depending on the selections made for each of the requirements.

Specific requirements:

### 1. Affiliated Sciences and Math

- WLE 220 - Introduction to Ecological Statistics Credits: 4
- This course can substitute for STS 232 Principles of Statistical Inference

## 2. Area I. Cell and Molecular Biology

Free choice among Area I courses in the Biology curriculum Credits: 3-4

## 3. Area II. Genetics

- Free choice among Area II courses in the Biology curriculum Credits: 3-5

## 4. Area III. Physiology

- Free choice among Area III courses in the Biology curriculum Credits: 3

## 5. Area IV. Biodiversity

- BIO 465 Evolution is required plus 3 additional credits chosen from the courses in the Biology curriculum Credits: 6-7

## 6. Area V. Ecology and Behavior

BIO 319 or WLE 200 or SMS 300 is required plus 3 additional credits chosen from the following courses: Credits: 6-7

- BIO 205 - Field Natural History of Maine Credits: 4
- BIO 327 - Introductory Applied Entomology Credits: 4
- BIO 354 - Animal Behavior Credits: 3
- BIO 355 - Animal Behavior Laboratory Credits: 2
- BIO 434 - Avian Biology and Ecology Credits: 3
- BIO 437 - Avian Biology and Ecology Laboratory Credits: 1
- BIO 447 - Experimental Ecology Credits: 4
- BIO 455 - Biological Invasions Credits: 4
- BIO 463 - River Ecology Credits: 4
- BIO 468 - Lake Ecology Credits: 3
- BIO 476 - Paleoecology Credits: 4
- EES 475 - Field Studies in Ecology Credits: 1-3
- PSE 457 - Plant Pathology Credits: 4
- PSE 469 - Soil Microbiology Credits: 3
- SFR 457 - Tree Pests and Disease Credits: 3
- WLE 201 - Ecology Laboratory Credits: 3
- WLE 423 - Wetland Ecology and Conservation Credits: 4

## 7. Primary and Secondary Producers

Choose at least one course labeled A and one labeled P from Areas I-V in the Biology curriculum. These courses can also satisfy requirements in Areas I-V for the basic Biology major and so do not add to the number of credits needed beyond the basic Biology major.

## 8. Area VI. Environmental Influences

Three credits are required. Choose from these courses:

- EES 140 - Soil Science Credits: 3
- EES 141 - Soil Science Laboratory Credits: 1
- ERS 101 - Introduction to Geology Credits: 4
- ERS 102 - Environmental Geology of Maine Credits: 4
- ERS 108 - Beaches and Coasts Credits: 3
- INT 482 - (SBE, PSE) Pesticides and the Environment Credits: 3
- PSE 320 - Soil Organic Matter Management Credits: 3
- SFR 406 - Remote Sensing Image Interpretation and Forest Mapping Credits: 3

## 9. Field Experience

Choose at least one course from this list. This course can also satisfy one of the areas above.

- BIO 205 - Field Natural History of Maine Credits: 4
- BIO 355 - Animal Behavior Laboratory Credits: 2
- BIO 430 - Ecology and Systematics of Aquatic Insects Credits: 4
- BIO 437 - Avian Biology and Ecology Laboratory Credits: 1
- BIO 463 - River Ecology Credits: 4
- EES 475 - Field Studies in Ecology Credits: 1-3
- WLE 423 - Wetland Ecology and Conservation Credits: 4

## 10. Capstone

Choose one of these courses:

- BIO 388 - Research Capstone in Biology Credits: 1-3
- BIO 392 - Independent Study Capstone in Biology Credits: 1-3
- BIO 447 - Experimental Ecology Credits: 4
- BIO 463 - River Ecology Credits: 4
- HON 499 - Honors Thesis Credits: 3  
(Must be a topic in Biology and the thesis advisor should be in SBE)

## 11. Writing requirement (students in the Honors program are exempt)

One course required. Choose from the following courses\*:

- ENG 212 - Persuasive and Analytical Writing Credits: 3
- ENG 317 - Business and Technical Writing Credits: 3

\*These courses satisfy the general education writing intensive requirement and so do not add to the number credits needed beyond the basic Biology major.

## Botany

## OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** Botany Majors must have a "C" or better in BIO 100 and BIO 200.

**Other GPA requirements to graduate:** Botany Majors require a cumulative 2.0 GPA in all courses in Biological Sciences Areas I-V, affiliated science, and math courses combined.

**Required Course(s) for fulfilling Capstone Experience:** BIO 388 or BIO 392 or BIO 402 or BIO 438 or BIO 447 or BIO 450 or BIO 463 or HON 499\*. See concentration curriculum's for specific requirements.\*The thesis topic must be in Biology and the thesis advisor should be in the School of Biology and Ecology.

**Contact Information:** Ann Dieffenbacher-Krall, Assistant Director of the School of Biology and Ecology, 100 Murray Hall, (207) 581-2510, annd@maine.edu

### Bachelor of Science or Bachelor of Arts

The School of Biology and Ecology offers both B.S. and B.A. degrees in Botany. Both degrees provide a strong background in biological sciences. They have the same requirements in biological sciences and differ only in the level of chemistry, mathematics, and physics required. The B.S. requires more in depth study of chemistry, math, and physics while the B.A. requires more social sciences and humanities. The B.S. provides preparation for the health professions and graduate study while the B.A. ensures a broad liberal arts education and allows more flexibility for minors and double majors.

Botany B.S.

Botany B.A.

## Botany B.S.

The B.S. degree in Botany is offered by the School of Biology and Ecology. For information about areas of research and for an overview of our facilities, cooperative programs, and list of faculty in the School of Biology and Ecology, see our web site [www.sbe.umaine.edu/](http://www.sbe.umaine.edu/)

Students choosing Botany as a second major must complete the second major by selecting courses in Areas I-V that are not being used to satisfy the requirements of their first major.

Students majoring in Botany are not eligible for a minor or second major in Biology or Zoology because of extensive overlap in the requirements for these degrees.

Students majoring in Botany must complete an assessment exit exam in their last semester prior to graduating.

Students majoring in Botany must earn a score of 4 or 5 in order to receive advanced placement credit for BIO 100.

Students must complete a minimum of 12 credits originating from the University of Maine in Biological Sciences Areas I-V.

*Students wishing to transfer from other institutions or from another program within the University of Maine must have completed BIO 100: Basic Biology with a grade of C or better or have a cumulative GPA of 2.0 or better.*

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 produces, the foundation of 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.

Botany offers students many choices and allows them to tailor their programs to their interests. Students can choose from a wide range of courses covering all major areas of botany including cells and molecules, genetics and development, physiology, anatomy, evolution and biodiversity, and ecology. Each student works with an academic adviser in the faculty to develop a curriculum that best meets the student's goals and allows for exploration or specialization as desired. Students in their third or fourth years of study, and who intend to pursue post-baccalaureate studies leading to advanced degrees, are strongly encouraged to include independent research under the guidance of a faculty member in their programs.

### **Biology Club**

Students majoring in Biology, Botany, Zoology, and Medical Laboratory Sciences (Medical Technology) 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.

### **Concentration in the BS Degree in Botany**

An optional concentration is available in:

- Ecology-This concentration is described in detail following the suggested sequence of courses for the BS in Botany.

### **Combined B.S. and M.S. degrees in Botany, Entomology, or Zoology**

These Four Plus programs allow highly dedicated students to earn both the B.S. and the M.S. degrees in five to six years. This allows the student to save time and reduces the cost of the M.S. degree. See our web site for details.

## **Basic Biological Sciences for the B.S. in Botany**

Note: BIO 208, Anatomy and Physiology, BIO 222 Biology: The Living Science and BIO 323 Biology: The Living Science Laboratory- will not count towards the major for students majoring in Botany

- BIO 100 - Basic Biology Credits: 4
- BIO 200 - Biology of Organisms Credits: 4

## **Biological Sciences Areas I-V**

The following are minimum requirements for these 5 areas: 24 credits, 3 credits/area, 4 laboratory (L) courses, and at least 3 plant (P) courses from areas III - V.

If BIO 438, BIO 477, BIO 450, or BIO 463 is taken as a capstone, it can satisfy the area in which it is listed and can count as a laboratory course (if labeled L) but cannot count towards the 24 credits required in Areas I-V.

## I. Cell and Molecular Biology

If only one course is selected from this area, it must be BMB 280 or BIO 480.

- BIO 336 - Developmental Biology Credits: 4
- BIO 438 - Morphogenesis in Development and Disease Credits: 3
- BIO 441 - Microscopy Credits: 2
- BIO 450 - Histology Credits: 4
- BIO 474 - Neurobiology Credits: 3
- BIO 480 - Cell Biology Credits: 3
- BIO 483 - Cell Biology Laboratory Credits: 1
- BMB 280 - Introduction to Molecular and Cellular Biology Credits: 3
- BMB 300 - General Microbiology Credits: 3
- BMB 305 - General Microbiology Laboratory Credits: 2
- BMB 420 - Infectious Disease Credits: 3
- BMB 421 - Infectious Disease Laboratory Credits: 2
- L - BIO 336, BIO 450, BIO 483, BMB 305, BMB 421

## II. Genetics

- BIO 350 - Concepts and Applications of Genetics Credits: 3
- BIO 462 - Principles of Genetics Credits: 3
- BMB 400 - Molecular Genetics Credits: 3
- BMB 490 - Microbial Genetics Credits: 5
- L - BMB 490

## III. Physiology

- BIO 307 - Introduction to Neuroscience Credits: 3
- BIO 377 - Medical Physiology Credits: 3
- BIO 378 - Medical Physiology Laboratory Credits: 2
- BIO 452 - Plant Physiology Credits: 3
- BMB 430 - Bacterial Physiology Credits: 3
- BMB 431 - Bacterial Physiology Laboratory Credits: 1
- BMB 440 - Introductory Immunology Credits: 3
- BMB 441 - Introductory Immunology Laboratory Credits: 1
- SMS 485 - Comparative Animal Physiology Credits: 3
- L - BIO 378, BIO 483, BMB 431, BMB 441
- A - BIO 307, BIO 377, BIO 479, BMB 440, SMS 485
- P - BIO 452

## IV. Biodiversity and Evolution

- BIO 310 - Plant Biology Credits: 4
- BIO 326 - General Entomology Credits: 4
- BIO 329 - Vertebrate Biology Credits: 3
- BIO 331 - Vertebrate Biology Laboratory Credits: 1
- BIO 335 - Human Anatomy Credits: 4
- BIO 342 - Plants in Our World Credits: 3
- BIO 353 - Invertebrate Zoology Credits: 4
- BIO 430 - Ecology and Systematics of Aquatic Insects Credits: 4
- BIO 432 - Biology of the Fungi Credits: 4
- BIO 433 - Mammalogy Credits: 4
- BIO 464 - Taxonomy of Vascular Plants Credits: 4
- BIO 465 - Evolution Credits: 3
- SFR 439 - Plant Anatomy Structure and Function Credits: 3
- SMS 373 - Marine and Freshwater Algae Credits: 4
- L- BIO 310, BIO 326, BIO 331, BIO 335, BIO 353, BIO 430, BIO 432, BIO 433, BIO 464, SFR 439, SMS 373
- A - BIO 326, BIO 329, BIO 335, BIO 353, BIO 430, BIO 433
- P - BIO 310, BIO 342, BIO 432, BIO 464, SFR 439, SMS 373

## 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 Credits: 4
- BIO 319 - General Ecology Credits: 3
- BIO 327 - Introductory Applied Entomology Credits: 4
- BIO 354 - Animal Behavior Credits: 3
- BIO 355 - Animal Behavior Laboratory Credits: 2
- BIO 434 - Avian Biology and Ecology Credits: 3
- BIO 437 - Avian Biology and Ecology Laboratory Credits: 1
- BIO 447 - Experimental Ecology Credits: 4
- BIO 455 - Biological Invasions Credits: 4
- BIO 463 - River Ecology Credits: 4
- BIO 468 - Lake Ecology Credits: 3
- BIO 476 - Paleoecology Credits: 4
- EES 140 - Soil Science Credits: 3
- EES 141 - Soil Science Laboratory Credits: 1
- EES 475 - Field Studies in Ecology Credits: 1-3
- INT 482 - (SBE, PSE) Pesticides and the Environment Credits: 3
- PSE 320 - Soil Organic Matter Management Credits: 3
- PSE 457 - Plant Pathology Credits: 4
- SMS 300 - Marine Ecology Credits: 3
- WLE 200 - Ecology Credits: 3
- WLE 201 - Ecology Laboratory Credits: 3
- WLE 423 - Wetland Ecology and Conservation Credits: 4



- L - BIO 205, BIO 327, BIO 355, BIO 437, BIO 447, BIO 463, BIO 476, EES 141, EES 475, PSE 457, WLE 201, WLE 423
- A - BIO 327, BIO 354, BIO 434
- P - PSE 457

## Affiliated Sciences and Math

To complete your B.S. in Botany you must take courses in Chemistry, Mathematics, and Physics. Below we have outlined your options for completing each requirement.

### Required Courses

- CHY 121 - Introduction to Chemistry Credits: 3
- CHY 122 - The Molecular Basis of Chemical Change Credits: 3
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- CHY 124 - The Molecular Basis of Chemical Change Laboratory Credits: 1

### Organic Chemistry Option 1

- BMB 221 - Organic Chemistry Credits: 3
- BMB 222 - Laboratory in Organic Chemistry Credits: 1
- BMB 322 - Biochemistry Credits: 3
- BMB 323 - Biochemistry Laboratory Credits: 2
- Total Organic Chemistry Credits: 9

### Organic Chemistry Option 2

- CHY 251 - Organic Chemistry I Credits: 3
- CHY 253 - Organic Chemistry Laboratory I Credits: 2
- BMB 322 - Biochemistry Credits: 3
- BMB 323 - Biochemistry Laboratory Credits: 2
- Total Organic Chemistry Credits: 10

### Organic Chemistry Option 3

- CHY 251 - Organic Chemistry I Credits: 3
- CHY 253 - Organic Chemistry Laboratory I Credits: 2
- CHY 252 - Organic Chemistry II Credits: 3
- CHY 254 - Organic Chemistry Laboratory II Credits: 2
- Total Organic Chemistry Credits: 10

## Mathematics

- MAT 126 - Calculus I Credits: 4
- STS 232 - Principles of Statistical Inference Credits: 3
- Total Mathematics Credits: 7

### Physics Option 1

- PHY 111 - General Physics I Credits: 4
- PHY 112 - General Physics II Credits: 4
- Total Physics Credits: 8

### Physics Option 2

- PHY 121 - Physics for Engineers and Physical Scientists I Credits: 4
- PHY 122 - Physics for Engineers and Physical Scientists II Credits: 4
- Total Physics Credits: 8

## Courses in Suggested Sequence for the B.S. in Botany

### First Year - First Semester

- BIO 100 - Basic Biology Credits: 4
- CHY 121 - Introduction to Chemistry Credits: 3  
Enrollment in CHY 121 requires readiness for MAT 122 or equivalent. Students who are not ready to take MAT 122 or its equivalent take CHY 121 in the second year.
- with**
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- ENG 101 - College Composition Credits: 3
- or**
- General Education Requirement<sup>1</sup> Credits: 3
- MAT 122 - Pre-Calculus Credits: 4
- or**
- MAT 126 - Calculus I Credits: 4
- NFA 117 - Issues and Opportunities Credits: 1

### First Year - Second Semester

- BIO 200 - Biology of Organisms Credits: 4
- CHY 122 - The Molecular Basis of Chemical Change Credits: 3
- with**
- CHY 124 - The Molecular Basis of Chemical Change Laboratory Credits: 1

- ENG 101 - College Composition Credits: 3
- (If not taken in the first semester)
- General Education Requirement<sup>1</sup> Credits: 3-6
- **or**
- MAT 126 - Calculus I Credits: 4
- (If not taken in the first semester)

## Second Year - First Semester

- CHY 251 - Organic Chemistry I Credits: 3  
(See Footnote 3)
- **with**
- CHY 253 - Organic Chemistry Laboratory I Credits: 2  
(see Footnote 3)
- STS 232 - Principles of Statistical Inference Credits: 3
- General Education Requirement or Elective Credits:3
- Biological Sciences Area Choice<sup>2</sup> Credits: 3-4

## Second Year - Second Semester

- CHY 252 - Organic Chemistry II Credits: 3
- **with**
- CHY 254 - Organic Chemistry Laboratory II Credits: 2
- Biological Sciences Area Choice<sup>2</sup> Credits: 3-5
- General Education Requirement or Elective Credits: 6

## Third Year - First Semester

- PHY 111 - General Physics I Credits: 4  
(see Footnote 4)
- General Education Requirement or Elective Credits: 6
- Biological Sciences Area Choice<sup>2</sup> Credits: 5-7

## Third Year - Second Semester

- PHY 112 - General Physics II Credits: 4

- General Education Requirement or Elective Credits: 6-9
- Biological Sciences Area Choice<sup>2</sup> Credits: 3-4

## Fourth Year - First Semester

- Biological Sciences Area Choice<sup>2</sup> Credits: 4
- Capstone<sup>5</sup> or Elective Credits: 3
- General Education Requirements or Electives Credits: 6-9

## Fourth Year - Second Semester

- Biological Sciences Area Choice<sup>2</sup> Credits: 4-9
- Elective or Capstone<sup>5</sup> Credits: 3
- General Education Requirements or Electives Credits: 6-9

## Footnotes

<sup>1</sup>See the General Education requirements for all students at the University. If BIO 400 (Biological Sciences Writing Intensive) is used to satisfy the General Education 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.

<sup>2</sup>See above lists of courses in the 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 plant (P) courses in areas III-V.

<sup>3</sup> Alternatively, students may take BMB 221/222 and BMB 322/323 or CHY 251/253 and BMB 322/323.

<sup>4</sup> Alternatively, students may take PHY 121/122.

<sup>5</sup>The General Education capstone experience requirement may be completed with BIO 388, 392, 402, 438, 447, 450, 463, or HON 499.

## Concentration in Ecology

This concentration is intended for students interested in exposure to ecological principles within the context of a rigorous biological sciences curriculum. Students in this concentration must meet all of the requirements for the Botany B.S. degree. The concentration also includes WLE 220 Introduction to Statistical Ecology and a requirement for a course on environmental influences. A total of 29-35 credits are required to complete the concentration depending on the selections made for each of the requirements.

Specific requirements:

### 1. Affiliated Sciences and Math

- WLE 220 - Introduction to Ecological Statistics Credits: 4
- This course can substitute for STS 232-Principles of Statistical Inference.

## 2. Area I. Cell and Molecular Biology

- Free choice among Area I courses in the Botany curriculum Credits: 3-4

## 3. Area II. Genetics

- Free choice among Area II courses in the Botany curriculum Credits: 3-5

## 4. Area III. Physiology

- Free choice among Area III courses in the Botany curriculum Credits: 3

## 5. Area IV. Biodiversity

- BIO 465 - Evolution Credits: 3
- Plus 3 additional credits chosen from the courses in the Botany curriculum Credits: 6-7

## 6. Area V. Ecology and Behavior

- BIO 319 - General Ecology Credits: 3
- Or
- SMS 300 - Marine Ecology Credits: 3
- Or
- WLE 200 - Ecology Credits: 3
- You are required to take one of the above: BIO 319, WLE 200, or SMS 300 plus
- 3 additional credits from the following courses. 6-7 Total Credits
  
- BIO 205 - Field Natural History of Maine Credits: 4
- BIO 327 - Introductory Applied Entomology Credits: 4
- BIO 354 - Animal Behavior Credits: 3
- BIO 355 - Animal Behavior Laboratory Credits: 2
- BIO 434 - Avian Biology and Ecology Credits: 3
- BIO 437 - Avian Biology and Ecology Laboratory Credits: 1
- BIO 447 - Experimental Ecology Credits: 4
- BIO 455 - Biological Invasions Credits: 4
- BIO 463 - River Ecology Credits: 4
- BIO 468 - Lake Ecology Credits: 3
- BIO 476 - Paleoecology Credits: 4
- EES 475 - Field Studies in Ecology Credits: 1-3
- PSE 457 - Plant Pathology Credits: 4
- PSE 469 - Soil Microbiology Credits: 3
- SFR 457 - Tree Pests and Disease Credits: 3
- WLE 201 - Ecology Laboratory Credits: 3
- WLE 423 - Wetland Ecology and Conservation Credits: 4

## 7. Primary and Secondary Producers

Choose at least one course labeled A and one labeled P from Areas I-V in the Botany curriculum. These courses can also satisfy requirements in Areas I-V for the basic Botany major and so do not add to the number of credits needed beyond the basic Botany major.

## 8. Area VI. Environmental Influences

Three credits are required. Choose from these courses:

- EES 140 - Soil Science Credits: 3
- EES 141 - Soil Science Laboratory Credits: 1
- ERS 101 - Introduction to Geology Credits: 4
- ERS 102 - Environmental Geology of Maine Credits: 4
- ERS 108 - Beaches and Coasts Credits: 3
- INT 482 - (SBE, PSE) Pesticides and the Environment Credits: 3
- PSE 320 - Soil Organic Matter Management Credits: 3
- SFR 406 - Remote Sensing Image Interpretation and Forest Mapping Credits: 3

## 9. Field Experience

Choose at least one course from this list. This course can also satisfy one of the areas above.

- BIO 205 - Field Natural History of Maine Credits: 4
- BIO 355 - Animal Behavior Laboratory Credits: 2
- BIO 430 - Ecology and Systematics of Aquatic Insects Credits: 4
- BIO 437 - Avian Biology and Ecology Laboratory Credits: 1
- BIO 463 - River Ecology Credits: 4
- EES 475 - Field Studies in Ecology Credits: 1-3
- WLE 423 - Wetland Ecology and Conservation Credits: 4

## 10. Capstone

Choose one of these courses\*:

- BIO 388 - Research Capstone in Biology Credits: 1-3
- BIO 392 - Independent Study Capstone in Biology Credits: 1-3
- BIO 447 - Experimental Ecology Credits: 4
- BIO 463 - River Ecology Credits: 4
- HON 499 - Honors Thesis Credits: 3  
(Must be a topic in Biology and the thesis advisor should be in SBE)

## 11. Writing requirement (students in Honors Program are exempt)

One course required. Choose from the following courses\*:

- ENG 212 - Persuasive and Analytical Writing Credits: 3
  - ENG 317 - Business and Technical Writing Credits: 3
- \* These courses satisfy the general education writing intensive requirement and so do not add to the number credits needed beyond the basic Botany major.

## Botany B.A.

The B.A. degree in Botany is offered by the School of Biology and Ecology. For information about areas of research and for an overview of our facilities, cooperative programs, and list of faculty in the School of Biology and Ecology, see our web site [www.sbe.umaine.edu/](http://www.sbe.umaine.edu/)

Students choosing Botany as a second major must complete the second major by selecting courses in Areas I-V that are not being used to satisfy the requirements of their first major.

Students majoring in Botany are not eligible for a minor or second major in Biology or Zoology because of extensive overlap in the requirements for these degrees.

Students majoring in Botany must complete an assessment exit exam in their last semester prior to graduating.

Students majoring in Botany must earn a score of 4 or 5 in order to receive advanced placement credit for BIO 100.

Students must complete a minimum of 12 credits originating from the University of Maine in Biological Sciences Areas I-V.

*Students wishing to transfer from other institutions or from another program within the University of Maine must have completed BIO 100: Basic Biology with a grade of C or better or have a cumulative GPA of 2.0 or better.*

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 of 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.

Botany offers students many choices and allows them to tailor their programs to their interests. Students can choose from a wide range of courses covering all major areas of botany including cells and molecules, genetics and development, physiology, anatomy, evolution and biodiversity, and ecology. Each student works with an academic adviser in the faculty to develop a curriculum that best meets the student's goals and allows for exploration or specialization as desired. Students in their third or fourth years of study, and who intend to pursue post-baccalaureate studies leading to advanced degrees, are strongly encouraged to include independent research under the guidance of a faculty member in their programs.

### **Biology Club**

Students majoring in Biology, Botany, Zoology, and Medical Laboratory Sciences (Medical Technology) 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.

### **Optional Concentration in the BA Degree in Botany**

Students may complete the basic B.A. in Botany or they may add the optional Ecology Concentration. This concentration is described in detail following the suggested sequence of courses for the B.A. in Botany.

## **Basic Biological Sciences for the B.A. in Botany**

Note: BIO 208, Anatomy and Physiology, BIO 222 Biology: The Living Science, and BIO 223 Biology the Living Science Laboratory will not count towards the major for students majoring in Botany.

- BIO 100 - Basic Biology Credits: 4
- BIO 200 - Biology of Organisms Credits: 4

## **Biological Sciences Areas I-V**

The following are minimum requirements for these 5 areas: 24 credits, 3 credits/area, 4 laboratory (L) courses, and at least 3 plant (P) courses from areas III - V.

If BIO 438, BIO 447, BIO 450, or BIO 463 is taken as a capstone, it can satisfy the area in which it is listed and can count as a laboratory course (if labeled L) but cannot count towards the 24 credits required in Areas I-V.

### **I. Cell and Molecular Biology**

If only one course is selected from this area, it must be BMB 280 or BIO 480.

- BIO 336 - Developmental Biology Credits: 4
- BIO 438 - Morphogenesis in Development and Disease Credits: 3
- BIO 441 - Microscopy Credits: 2
- BIO 450 - Histology Credits: 4
- BIO 474 - Neurobiology Credits: 3
- BIO 480 - Cell Biology Credits: 3
- BIO 483 - Cell Biology Laboratory Credits: 1
- BMB 280 - Introduction to Molecular and Cellular Biology Credits: 3
- BMB 300 - General Microbiology Credits: 3
- BMB 305 - General Microbiology Laboratory Credits: 2
- BMB 420 - Infectious Disease Credits: 3
- BMB 421 - Infectious Disease Laboratory Credits: 2
- L-BIO 336, BIO 450, BIO 483, BMB 305, BMB 421

### **II. Genetics**

- BIO 350 - Concepts and Applications of Genetics Credits: 3
- BIO 462 - Principles of Genetics Credits: 3
- BMB 400 - Molecular Genetics Credits: 3
- BMB 490 - Microbial Genetics Credits: 5



L- BMB 490

### III. Physiology

- BIO 307 - Introduction to Neuroscience Credits: 3
- BIO 377 - Medical Physiology Credits: 3
- BIO 378 - Medical Physiology Laboratory Credits: 2
- BIO 452 - Plant Physiology Credits: 3
- BIO 479 - Endocrinology Credits: 3
- BIO 480 - Cell Biology Credits: 3
- BIO 483 - Cell Biology Laboratory Credits: 1
- BMB 430 - Bacterial Physiology Credits: 3
- BMB 431 - Bacterial Physiology Laboratory Credits: 1
- BMB 440 - Introductory Immunology Credits: 3
- BMB 441 - Introductory Immunology Laboratory Credits: 1
- SMS 485 - Comparative Animal Physiology Credits: 3
- L - BIO 378, BIO 483, BMB 431, BMB 441
- A - BIO 307, BIO 377, BIO 479, BMB 440, SMS 485
- P - BIO 452

### IV. Biodiversity and Evolution

- BIO 310 - Plant Biology Credits: 4
- BIO 326 - General Entomology Credits: 4
- BIO 329 - Vertebrate Biology Credits: 3
- BIO 331 - Vertebrate Biology Laboratory Credits: 1
- BIO 335 - Human Anatomy Credits: 4
- BIO 342 - Plants in Our World Credits: 3
- BIO 353 - Invertebrate Zoology Credits: 4
- BIO 430 - Ecology and Systematics of Aquatic Insects Credits: 4
- BIO 432 - Biology of the Fungi Credits: 4
- BIO 433 - Mammalogy Credits: 4
- BIO 464 - Taxonomy of Vascular Plants Credits: 4
- BIO 465 - Evolution Credits: 3
- SFR 439 - Plant Anatomy Structure and Function Credits: 3
- SMS 373 - Marine and Freshwater Algae Credits: 4
- L- BIO 310, BIO 326, BIO 331, BIO 335, BIO 353, BIO 430, BIO 432, BIO 433, BIO 464, SFR 439, SMS 373
- A - BIO 326, BIO 329, BIO 335, BIO 353, BIO 430, BIO 433
- P - BIO 310, BIO 342, BIO 432, BIO 464, SFR 439, SMS 373

### 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 Credits: 4
- BIO 319 - General Ecology Credits: 3
- BIO 327 - Introductory Applied Entomology Credits: 4
- BIO 354 - Animal Behavior Credits: 3
- BIO 355 - Animal Behavior Laboratory Credits: 2
- BIO 434 - Avian Biology and Ecology Credits: 3
- BIO 437 - Avian Biology and Ecology Laboratory Credits: 1
- BIO 447 - Experimental Ecology Credits: 4
- BIO 455 - Biological Invasions Credits: 4
- BIO 463 - River Ecology Credits: 4
- BIO 468 - Lake Ecology Credits: 3
- BIO 476 - Paleoecology Credits: 4
- EES 140 - Soil Science Credits: 3
- EES 141 - Soil Science Laboratory Credits: 1
- EES 475 - Field Studies in Ecology Credits: 1-3
- INT 482 - (SBE, PSE) Pesticides and the Environment Credits: 3
- PSE 320 - Soil Organic Matter Management Credits: 3
- PSE 457 - Plant Pathology Credits: 4
- SMS 300 - Marine Ecology Credits: 3
- WLE 200 - Ecology Credits: 3
- WLE 201 - Ecology Laboratory Credits: 3
- WLE 423 - Wetland Ecology and Conservation Credits: 4
- L - BIO 205, BIO 327, BIO 355, BIO 437, BIO 447, BIO 463, BIO 476, EES 141, EES 475, PSE 457, WLE 201, WLE 423
- A - BIO 327, BIO 354, BIO 434
- P - PSE 457

## Affiliated Sciences and Math

- CHY 121 - Introduction to Chemistry Credits: 3
- CHY 122 - The Molecular Basis of Chemical Change Credits: 3
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- CHY 124 - The Molecular Basis of Chemical Change Laboratory Credits: 1

## Organic Chemistry Option 1

- BMB 221 - Organic Chemistry Credits: 3
- BMB 222 - Laboratory in Organic Chemistry Credits: 1
- BMB 322 - Biochemistry Credits: 3
- BMB 323 - Biochemistry Laboratory Credits: 2
- Total Organic Chemistry Credits: 9

## Organic Chemistry Option 2

- CHY 251 - Organic Chemistry I Credits: 3

- CHY 253 - Organic Chemistry Laboratory I Credits: 2
  - BMB 322 - Biochemistry Credits: 3
  - BMB 323 - Biochemistry Laboratory Credits: 2
- Total Organic Chemistry Credits: 10

### Organic Chemistry Option 3

- CHY 251 - Organic Chemistry I Credits: 3
  - CHY 253 - Organic Chemistry Laboratory I Credits: 2
  - CHY 252 - Organic Chemistry II Credits: 3
  - CHY 254 - Organic Chemistry Laboratory II Credits: 2
- Total Organic Chemistry Credits: 10

### Mathematics

- MAT 126 - Calculus I Credits: 4
  - STS 232 - Principles of Statistical Inference Credits: 3
- Total Mathematics Credits: 7

### Physics Option 1

- PHY 105 - Descriptive Physics Credits: 4
- Total Physics Credits: 4

### Physics Option 2

- PHY 111 - General Physics I Credits: 4
  - PHY 112 - General Physics II Credits: 4
- Total Physics Credits: 8

### Other Requirements for the B.A. in Botany

Students are required 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. In addition, the College of Natural Sciences, Forestry, and Agriculture requires 27 credits of General Education course in human Values and Social Context for the B.A. and at least 12 credits must be at the 200 level or above.

### Courses in Suggested Sequence for the B.A. in Botany

#### First Year - First Semester

- BIO 100 - Basic Biology Credits: 4
- CHY 121 - Introduction to Chemistry Credits: 3  
Enrollment in CHY 121 requires readiness for MAT 122 or equivalent. Students who are not ready to take MAT 122 or its equivalent take CHY 121 in the second year.  
**with**
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- ENG 101 - College Composition Credits: 3
- General Education Requirement<sup>1</sup> Credits: 3
- MAT 122 - Pre-Calculus Credits: 4
- NFA 117 - Issues and Opportunities Credits: 1

### First Year - Second Semester

- BIO 200 - Biology of Organisms Credits: 4
- CHY 122 - The Molecular Basis of Chemical Change Credits: 3  
**with**
- CHY 124 - The Molecular Basis of Chemical Change Laboratory Credits: 1
- ENG 101 - College Composition Credits: 3
- If not taken in the first semester
- General Education Requirement<sup>1</sup> Credits: 3-6

### Second Year - First Semester

- BMB 221 - Organic Chemistry Credits: 3 (see Footnote 3)  
**with**
- BMB 222 - Laboratory in Organic Chemistry Credits: 1
- STS 232 - Principles of Statistical Inference Credits: 3 (see Footnote 4)
- Biological Sciences Area Choice<sup>2</sup> Credits: 3
- General Education Requirement or Elective Credits: 3
- International Perspective<sup>5</sup> Credits: 3

### Second Year - Second Semester

- Biological Sciences Area Choice<sup>1</sup> Credits 3-5
- International perspective<sup>5</sup> Credits: 3
- General Education Requirement or Elective Credits 6-9

### Third Year - First Semester

- PHY 105 - Descriptive Physics Credits: 4 (see Footnote 6)
- Biological Sciences Area Choice<sup>2</sup> Credits: 2-4
- International Perspective<sup>5</sup> Credits: 3
- General Education Requirement or Elective Credits: 3

### Third Year - Second Semester

- General Education Requirement or Elective Credits: 3-12
- Biological Sciences Area Choice<sup>2</sup> Credits: 3-4

### Fourth Year - First Semester

- Biological Sciences Area Choice<sup>2</sup> Credits: 3-4
- Capstone<sup>7</sup> Credits: 3
- General Education Requirements or Elective Credits: 7-10

### Fourth Year - Second Semester

- Biological Sciences Area Choice<sup>2</sup> Credits 3-10
- General Education Requirements or Electives Credits: 4-12

### Footnotes

<sup>1</sup> See the General Education requirements for all students at the University. If BIO 400 (Biological Sciences Writing Intensive) is used to satisfy the General Education 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.

<sup>2</sup> See above lists of courses in the 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 plant (P) courses in areas III-V.

<sup>3</sup> Alternatively, students may take CHY251/253 and BMB 322/323 or CHY 251/253 and 252/254.

<sup>4</sup> Alternatively, students may take MAT 126.

<sup>5</sup> See Other Requirements for the B.A. degree above for ways to satisfy this requirement for the B.A. degree.

<sup>6</sup> Alternatively, students may take PHY 111 and 112.

<sup>7</sup> The General Education capstone experience may be completed with BIO 388, 392, 402, 438, 447, 450, 463, or HON 499.

## Concentration in Ecology

This concentration is intended for students interested in exposure to ecological principles within the context of a rigorous biological sciences curriculum. Students in this concentration must meet all of the requirements for the Botany B.A. degree. The concentration also includes WLE 220 Introduction to Statistical Ecology and a requirement for a course on environmental influences. A total of 29-35 credits are required to complete the concentration depending on the selections made for each of the requirements.

Specific requirements:

### 1. Affiliated Sciences and Math

- WLE 220 - Introduction to Ecological Statistics Credits: 4

- This course can substitute for STS 232-Principles of Statistical Inference.

## 2. Area I. Cell and Molecular Biology

- Free choice among Area I courses in the Botany curriculum Credits: 3-4

## 3. Area II. Genetics

- Free choice among Area II courses in the Botany curriculum Credits: 3-5

## 4. Area III. Physiology

- Free choice among Area III courses in the Botany curriculum Credits: 3

## 5. Area IV. Biodiversity

- BIO 465 - Evolution Credits: 3
- Plus 3 additional credits chosen from the courses in Area IV in the Botany curriculum Credits 6-7

## 6. Area V. Ecology and Behavior

- BIO 319 - General Ecology Credits: 3
- SMS 300 - Marine Ecology Credits: 3
- WLE 200 - Ecology Credits: 3
- You are required to take one of the above: BIO 319, SMS 300, or WLE 200
- Plus 3 additional credits from the following courses:
- 6-7 Total Credits
- BIO 205 - Field Natural History of Maine Credits: 4
- BIO 327 - Introductory Applied Entomology Credits: 4
- BIO 354 - Animal Behavior Credits: 3
- BIO 355 - Animal Behavior Laboratory Credits: 2
- BIO 434 - Avian Biology and Ecology Credits: 3
- BIO 437 - Avian Biology and Ecology Laboratory Credits: 1
- BIO 447 - Experimental Ecology Credits: 4
- BIO 455 - Biological Invasions Credits: 4
- BIO 463 - River Ecology Credits: 4
- BIO 468 - Lake Ecology Credits: 3
- BIO 476 - Paleoecology Credits: 4
- EES 475 - Field Studies in Ecology Credits: 1-3
- PSE 457 - Plant Pathology Credits: 4
- PSE 469 - Soil Microbiology Credits: 3
- SFR 457 - Tree Pests and Disease Credits: 3
- WLE 201 - Ecology Laboratory Credits: 3
- WLE 423 - Wetland Ecology and Conservation Credits: 4

## 7. Primary and Secondary Producers

Choose at least one course labeled A and one labeled P from Areas I-V in the Botany curriculum. These courses can also satisfy requirements in Areas I-V for the basic Botany major and so do not add to the number of credits needed beyond the basic Botany major.

## 8. Area VI. Environmental Influences

Three credits are required. Choose from these courses:

- EES 140 - Soil Science Credits: 3
- EES 141 - Soil Science Laboratory Credits: 1
- ERS 101 - Introduction to Geology Credits: 4
- ERS 102 - Environmental Geology of Maine Credits: 4
- ERS 108 - Beaches and Coasts Credits: 3
- INT 482 - (SBE, PSE) Pesticides and the Environment Credits: 3
- PSE 320 - Soil Organic Matter Management Credits: 3
- SFR 406 - Remote Sensing Image Interpretation and Forest Mapping Credits: 3

## 9. Field Experience

Choose at least one course from this list. This course can also satisfy one of the areas above.

- BIO 205 - Field Natural History of Maine Credits: 4
- BIO 355 - Animal Behavior Laboratory Credits: 2
- BIO 430 - Ecology and Systematics of Aquatic Insects Credits: 4
- BIO 437 - Avian Biology and Ecology Laboratory Credits: 1
- BIO 463 - River Ecology Credits: 4
- EES 475 - Field Studies in Ecology Credits: 1-3
- WLE 423 - Wetland Ecology and Conservation Credits: 4

## 10. Capstone

Choose one of these courses\*:

- BIO 388 - Research Capstone in Biology Credits: 1-3
- BIO 392 - Independent Study Capstone in Biology Credits: 1-3
- BIO 447 - Experimental Ecology Credits: 4
- BIO 463 - River Ecology Credits: 4
- HON 499 - Honors Thesis Credits: 3  
(Must be a topic in Biology and the thesis advisor should be in SBE).

## 11. Writing requirement (students in the Honors program are exempt)

One course required. Choose from the following courses\*:

- ENG 212 - Persuasive and Analytical Writing Credits: 3
  - ENG 317 - Business and Technical Writing Credits: 3
- \*These courses satisfy the general education writing intensive requirement and so do not add to the number of credits needed beyond the basic Botany major.

## Communication Sciences and Disorders

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** None.

**Other GPA requirements to graduate:** CSD majors require a cumulative 2.0 GPA in all CSD courses taken.

**Required Course(s) for fulfilling Capstone Experience:** CSD 491

**Contact Information:** 5724 Dunn Hall, Orono, ME 04469, 581-2403

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 the professions of speech-language pathology, audiology, and related fields. The Master's program in Communication Sciences and Disorders at the University of Maine is accredited by Council on Academic Accreditation (CAA) of the American Speech-Language-Hearing Association, 2200 Research Boulevard #310, Rockville, Maryland 20850, 800-498-2071 or 301-296-5700.

### **The Bachelor of Arts in Communication Sciences and Disorders**

Majors must complete coursework in biological and physical sciences, mathematics and statistics, behavioral and/or social sciences, basic normal communication and swallowing processes and nine credits in non-departmental cognate areas including PSY 100. A list of recommended courses is available from the Department. Students taking department courses to satisfy requirements within the Communication Sciences and Disorders major must have a cumulative GPA of C (2.0) or better in CSD courses.

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, Language and Hearing Center. Opportunities exist for students to observe clinical work, and develop research skills. Students are encouraged to speak with the department chair for more information.

### Required Courses for Students in Communication Sciences and Disorders Program



## Departmental Courses:

- CSD 130 - Introduction to Communication Sciences and Disorders Credits: 3
- CSD 300 - Clinical Observation in Communication Sciences and Disorders Credits: 1
- CSD 301 - Introduction to Clinical Audiology Credits: 3
- CSD 380 - Language Development Credits: 3
- CSD 383 - Anatomy and Physiology of the Speech Mechanism Credits: 3
- CSD 481 - Phonological Development and Phonetics Credits: 4
- CSD 482 - Neuroscience for Communication Disorders Credits: 3
- CSD 484 - Introduction to Speech Science Credits: 3
- CSD 487 - Disorders of Speech and Language Credits: 3
- CSD 490 - Senior Capstone: The Research Process Credits: 3
- CSD 491 - Senior Capstone: The Clinical Process Credits: 3

## Courses external to the CSD department:

- LBR 200 - Information Literacy Credits: 3
- PSY 100 - General Psychology Credits: 3
- One course in Statistics Credits: 3
- One course in Biological Science Credits: 3-4
- one course in Physical Science Credits: 3-4

## Students also are required to complete:

In-depth Study in a specific area and Additional coursework in Communication, Diversity, and/or Ethics.

### In-depth Study:

In-depth study involves at least 12 semester credit hours (with at least 9 at 200-level or higher) in a specific area. This may be accomplished through completion of a minor or second major. In-depth study coursework must be approved by the student's academic advisor.

### Additional Coursework:

Additional coursework includes 9 semester credit hours (beyond courses taken to satisfy General Education) in two of the following three areas: 1) Communications, 2) Diversity, 3) Ethics. A list of possible courses that fulfill this requirement is available in the department office.

## Suggested Curriculum for the BA in CSD

### First Year-First Semester

- CSD 100 - Majoring in Communication Sciences and Disorders Credits: 1

- PSY 100 - General Psychology Credits: 3
- Physical Science Credits: 3-4
- General Education Credits: 3
- General Education Credits: 3

## First Year-Second Semester

- CSD 130 - Introduction to Communication Sciences and Disorders Credits: 3
- Minor or Area of Concentration Credits: 3
- General Education Credits: 3
- General Education Credits: 3
- Math Credits: 3

## Second Year-First Semester

- CSD 380 - Language Development Credits: 3
- LBR 200 - Information Literacy Credits: 3
- General Education Credits: 3
- General Education Credits: 3
- General Education Credits: 3

## Second Year- Second Semester

- Biological Science Credits: 3-4
- Minor or Area of Concentration Credits: 3
- General Education Credits: 3
- General Education Credits: 3
- General Education Credits: 3

## Third Year-First Semester

- CSD 301 - Introduction to Clinical Audiology Credits: 3
- CSD 383 - Anatomy and Physiology of the Speech Mechanism Credits: 3
- STS 232 - Principles of Statistical Inference Credits: 3
- Minor or Area of Concentration Credits: 3
- General Elective Credits: 3

## Third Year-Second Semester

- CSD 300 - Clinical Observation in Communication Sciences and Disorders Credits: 1
- CSD 482 - Neuroscience for Communication Disorders Credits: 3
- CSD 487 - Disorders of Speech and Language Credits: 3
- General Education Credits: 3

- General Education Credits: 3
- General Elective Credits: 3

## Fourth Year-First Semester

- CSD 481 - Phonological Development and Phonetics Credits: 4
- CSD 490 - Senior Capstone: The Research Process Credits: 3
- General Education Credits: 3
- Minor or Area of Concentration Credits: 3
- General Elective Credits: 3

## Fourth Year-Second Semester

- CSD 484 - Introduction to Speech Science Credits: 3
- CSD 491 - Senior Capstone: The Clinical Process Credits: 3
- General Elective Credits: 3
- General Elective Credits: 3
- General Elective Credits: 3

# Earth Sciences

## OVERVIEW OF DEGREE REQUIREMENTS - Earth Sciences B.A.

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0.

**Minimum Grade requirements for courses to count toward major:** all B.S. and B.A. students in the School of Earth and Climate Sciences must achieve at least a grade of "C-" in all ERS and ancillary science and mathematics courses.

**Other GPA requirements to graduate:** None.

**Minimum Number of credits in departments other than Earth and Climate Sciences:** 72 credits outside of the department with 27 of those credits in the Human Values and Social Contexts area of the General Education requirements, with 12 of those credits at the 200 and above level.

**Required Course(s) for fulfilling Capstone Experience:** ERS 499

**Contact Information:** Alice R. Kelley, Undergraduate Coordinator, 111 Bryand Global Science Center, 207-581-2056, akelley@maine.edu

## OVERVIEW OF DEGREE REQUIREMENTS ■ Earth Sciences B.S.

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0.

**Minimum Grade requirements for courses to count toward major:** all B.S. and B.A. students in the School of Earth and Climate Sciences must achieve at least a grade of "C-" in all ERS and ancillary science and mathematics courses.

**Other GPA requirements to graduate:** None.

**Required Course(s) for fulfilling Capstone Experience:** ERS 499

**Contact Information:** Alice R. Kelley, Undergraduate Coordinator, 111 Bryand Global Science Center, 207-581-2056, akelley@maine.edu

The School of Earth and Climate Sciences offers B.A. degree in Earth Sciences and a B.S. degree in Earth Sciences with an Earth Systems or Climate Systems concentration. We also offer an Environmental Geosciences Concentration through the B.S. in the Ecology and Environmental Sciences program. Our program also provides a wide range of courses accessible to the non-major interested in the Earth and our environment. Our curriculum is designed to prepare majors for careers in Earth Science-related fields as well as to provide all students with the knowledge they need to address future environmental challenges. Our website, <http://www.umaine.edu/earthclimate>, describes career opportunities in detail, the role of Earth Sciences in society, and what to expect as a major.

Our courses focus on the fundamental physical and chemical processes that shape the surface and interior of our planet - today, in the past, and into the future. Specific content areas include climate change, geodynamics (e.g., plate tectonics and mountain-building), marine geology and coastal processes, environmental geology, and Earth materials (e.g., ice, rocks, and minerals). The curriculum is designed so that many upper division courses are available to students without extensive prerequisites. We also encourage students to become involved in faculty and graduate student research projects. We welcome students in the Honors College to pursue a B.A. or B.S. degree in Earth Sciences and focus their honors thesis on an appropriate topic.

Several of our courses satisfy General Education requirements:

Applications of Scientific Knowledge - ERS 100, 103, 108, 110, 240

Lab in the Basic or Applied Sciences - ERS 101, 102, 110/111, 200, 201

Population and the Environment - ERS 102, 103, 108, 110, 121, 201, 441

Writing Intensive - ERS 315, 316, 441

B.A. or B.S. Earth Sciences graduates from our program are prepared to enter directly into education, industry, or federal and state agencies. A B.S. is typically required to enter graduate school in Earth Sciences. All ERS students must complete the University General Education requirements, a group of required core courses (ERS 100 or ERS 101 or ERS 102 or ERS 103; ERS 200; ERS 201; ERS 312; ERS 315; ERS 317; ERS 320; ERS 499), and ancillary mathematics and science requirements specific to their program. The College of Natural Sciences, Forestry and Agriculture also requires all students to complete NFA 117, usually in their first year in the School. A wide range of elective courses are available for each program.

B.A. students are also required to complete ERS 316, ERS 330, and 12 credits of ERS courses at the 200 level or above. Ancillary requirements for the B.A. are: MAT 126; CHY 121/123; PHY 111 or PHY 121. University regulations stipulate that B.A. students must complete 72 credits outside the School of Earth and Climate Sciences. Also required are 27 credits in the Human Values and Social Contexts area of the General Education requirements, with 12 of those credits at the 200 and above level.

B.S. students with an Earth Systems Concentration are also required to complete ERS 316, ERS 330, and 12 credits of ERS courses at the 200 level or above. Ancillary requirements for the B.S. are: MAT 126; MAT 127; MAT 232; CHY 121/123; CHY 122/124; PHY 111 or PHY 121; PHY 112 or PHY 122; COS 125 or COS 215 or COS 220 or ERS 230 or ERS 350 or ERS 420. The requirements leave sufficient opportunity for students to complete a minor in another field.

B.S. students with a Climate Systems Concentration are also required to complete ERS 121, SMS 100, BIO 100, ERS 240 and 15 credits of electives from an approved list of courses (see Department website). Ancillary requirements for the B.S. are: MAT

126; MAT 127; MAT 232; CHY 121/123; CHY 122/124; PHY 111 or PHY 121; PHY 112 or PHY 122; COS 125 or COS 215 or COS 220 or ERS 230 or ERS 350 or ERS 420. The requirements leave opportunity for students to complete a minor in another field.

## Required Courses in Suggested Sequence for B.S. in Earth Sciences (15 Credits/Semester)

Suggested Curriculum for a B.S. in Earth Sciences, with an Earth Systems Concentration (for students pursuing a B.A., electives can replace courses that are not required). Note that many upper division ERS courses are offered only in alternate years.

### First Year - First Semester

- ERS 101 - Introduction to Geology Credits: 4  
or
- ERS 102 - Environmental Geology of Maine Credits: 4
- MAT 126 - Calculus I Credits: 4
- NFA 117 - Issues and Opportunities Credits: 1
- ENG 101 - College Composition Credits: 3
- General Education Requirement Credits: 3

### First Year - Second Semester

- ERS 201 - Global Environmental Change Credits: 4
- MAT 127 - Calculus II Credits: 4
- General Education Requirement Credits: 7

### Second Year - First Semester

- ERS 200 - Earth Systems Credits: 4
- ERS 315 - Principles of Sedimentology and Stratigraphy Credits: 4  
or
- ERS 316 - Structural Geology Credits: 4
- ERS 230 - Earth and Climate Science Geomatics Credits: 4  
or
- General Education Requirement Credits: 3
- CHY 121 - Introduction to Chemistry Credits: 3
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1

### Second Year - Second Semester

- ERS 330 - Mineralogy Credits: 4  
and/or

- Electives (may include ERS Electives) Credits: 3-6
- General Education Requirements Credits: 4-5
- CHY 122 - The Molecular Basis of Chemical Change Credits: 3
- CHY 124 - The Molecular Basis of Chemical Change Laboratory Credits: 1

### Third Year - First Semester

- ERS 315 - Principles of Sedimentology and Stratigraphy Credits: 4  
or
- ERS 316 - Structural Geology Credits: 4
- ERS 320 - Research Seminar in Earth and Climate Sciences Credits: 1
- STS 232 - Principles of Statistical Inference Credits: 3
- PHY 121 - Physics for Engineers and Physical Scientists I Credits: 4
- ERS 230 - Earth and Climate Science Geomatics Credits: 4  
or
- General Education Requirement (if necessary) Credits: 4  
or
- ERS Electives Credits: 4

### Third Year - Second Semester

- ERS 330 - Mineralogy Credits: 4  
and/or
- ERS 317 - Introduction to Geophysics Credits: 3
- PHY 122 - Physics for Engineers and Physical Scientists II Credits: 4
- ERS 312 - Geochemistry Credits: 3  
and/or
- Electives (may include ERS Electives) Credits: 4-8

### Third Year (or Fourth Year) - Summer

- ERS 499 - Field Experience in Earth and Climate Sciences Credits: 4-6

### Fourth Year - First Semester

- Electives (may include ERS Electives) - Credits: 12-15
- General Education Requirement (if necessary) - Credits: 3

### Fourth Year - Second Semester

- ERS 317 - Introduction to Geophysics Credits: 3
- ERS 312 - Geochemistry Credits: 3  
and/or
- Electives (may include ERS Electives) Credits: 9-15

- General Education Requirement (if necessary) Credits: 3

## Ecology and Environmental Sciences

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** EES 489 requires minimum grade of C. All Concentration courses require a minimum grade of C.

**Other GPA requirements to graduate:** None.

**Required Course(s) for fulfilling Capstone Experience:** EES 489.

**Contact Information:** Julie Eubanks, Program Coordinator, 246 Nutting Hall, (207) 581-3176, ees@maine.edu

The Bachelor of Science in Ecology and Environmental Sciences is an interdisciplinary program offered cooperatively by the faculties of the Department of Anthropology, Department of Wildlife, Fisheries and Conservation Biology, School of Earth and Climate Sciences, School of Food and Agriculture; School of Biology and Ecology; School of Economics; and School of Forest Resources. Students majoring in the program are advised by over thirty-five faculty from these units. The program is designed for students who wish to pursue a professional career in ecology and environmental sciences in one of many applications: management, administration, planning, education, research or graduate school.

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, sustainability, and conservation.

The Ecology and Environmental Sciences curriculum is composed of eight requirement areas, amounting to at least 96 credits (depending upon selections), plus up to 24 credits reserved for unstructured electives. The requirement areas are as follows:

- I. Ecology and Environmental Sciences;
- II. Biological and Ecological Sciences;
- III. Social Sciences;
- IV. Physical and Chemical Sciences;
- V. Quantitative and Information Skills;
- VI. Communication Skills;
- VII. General Education;
- VIII. Concentrations;
- IX. 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. The program is also designed to allow students ample flexibility to pursue individual interests in preparing for careers or postgraduate study.

Six 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.

## 1. Ecology and Environmental Sciences (15 credits)

All students in the program take the core courses, beginning with EES 117. The capstone experience for majors is accomplished by the completion of EES 489. Students should not take the capstone course until fall of their senior year. Honors students meet the requirement for EES 490 through satisfactory completion of their Honors Directed Study and Thesis (HON 498/499). A minimum grade of C is required for EES 489.

- EES 100 - Human Population and the Global Environment Credits: 3
- EES 117 - Introduction to Ecology and Environmental Sciences Credits: 2
- EES 217 - The Acadia Lessons Project: Field Problems in EES Credits: 0-1
- EES 489 - Critical Issues in Ecology and Environmental Sciences Policy Credits: 4 (must be taken senior year)
- EES 490 - Senior Seminar Credits: 3
- PSE 121 - Human Societies, Soil and Water: The Unbreakable Link Credits: 3
- or**
- PHI 232 - Environmental Ethics Credits: 3
- or**
- ECO 381 - Sustainable Development Principles and Policy Credits: 3

## 2. Biological and Ecological Sciences (7 credits)

- BIO 100 - Basic Biology Credits: 4
- WLE 200 - Ecology Credits: 3
- or**
- SMS 300 - Marine Ecology Credits: 3  
  See Footnote 1
- or**
- BIO 319 - General Ecology Credits: 3  
  Note: Some concentrations require BIO 200. Please see concentration requirements. Students should also be aware that BIO 200 is a prerequisite for many upper level science electives.

## 3. Social Sciences (6 credits)

- EES 324 - Environmental Protection Law and Policy Credits: 3
- or**
- SFR 446 - Forest Resources Policy Credits: 3  
  See Footnote 2
- or**
- SMS 230 - Introduction to Marine Policy and Fisheries Management Credits: 3  
  See Footnote 3
- SFR 220 - Environment and Society Credits: 3 See Footnote 4
- or**
- ECO 180 - Citizens, Energy & Sustainability Credits: 3



#### 4. Physical and Chemical Sciences (16 credits)

- CHY 121 - Introduction to Chemistry Credits: 3  
**and**
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1  
**and**
- CHY 122 - The Molecular Basis of Chemical Change Credits: 3  
**and**
- CHY 124 - The Molecular Basis of Chemical Change Laboratory Credits: 1
  
- ERS 101 - Introduction to Geology Credits: 4  
**or**
- ERS 102 - Environmental Geology of Maine Credits: 4  
**or**
- ERS 108 - Beaches and Coasts Credits: 3  
**or**  
See footnote 5
- SMS 108 - Beaches and Coasts Credits: 3  
See footnote 6
- EES 140 - Soil Science Credits: 3  
**and**
- EES 141 - Soil Science Laboratory Credits: 1

#### 5. Quantitative and Information Skills (6-7 credits)

- STS 232 - Principles of Statistical Inference Credits: 3  
**or**
- WLE 220 - Introduction to Ecological Statistics Credits: 4  
**or**
- SFR 205 - Forest Measurements and Statistics Credits: 3  
See footnote 7
- SFR 400 - Applied Geographic Information Systems Credits: 4  
**or**  
See footnote 8
- ERS 230 - Earth and Climate Science Geomatics Credits: 4  
NOTE: A minimum of 3 additional math credits are required. Please see concentrations for specific math requirements.

#### 6. Communication Skills (9 credits)

- ENG 101 - College Composition Credits: 3
- ENG 317 - Business and Technical Writing Credits: 3

or

- ENG 212 - Persuasive and Analytical Writing Credits: 3
- SFR 222 - Environmental Communication Skills Credits: 3

NOTE: Students must earn a grade of C or better in College Composition. Honors students meet their English Composition requirement by completing the first-year Honors sequence with a minimum grade of C.

## 7. General Education

General Education requirements for mathematics, science and writing competency, a capstone experience, and ethics are met by the EES curriculum as outlined above. In addition, students must complete coursework in the following areas:

Human Values and Social Context (18 credits)

As part of the General Education requirements of the University of Maine, all undergraduates must complete the Human Values and Social Context (HVSC) requirement. Students must take at least three credits from each of five sub-categories. Depending on course choices, Social Context and Institutions *or* Western Cultural Traditions category is met within the EES core requirements. The Population and the Environment category is also met within the EES core requirements. Each student must complete electives in the remaining sub-categories (below) from an approved list:

- \* Western Cultural Tradition (3 cr.) OR Social Contexts and Institutions (3 cr.)
- \* Cultural Diversity and International Perspectives (3 cr.)
- \* Artistic and Creative Expression (3 cr.)

Completion of the Civilizations Sequence (HON 111, 112, 211 & 212) will satisfy all areas of the Human Values and Social Contexts (HSVC) general education requirement for 16 of the 18 required credits and the ethics requirement.

## 8. Program Concentrations

In addition to the core requirements that establish the basic foundation, each student must complete one concentration of study in the program. At a minimum, a concentration will entail 21 credits of course work with at least 15 credits being 300 or 400 level (Junior or Senior) courses. Courses taken as part of the core curriculum cannot be counted towards concentration requirements. For example, if a student chooses SFR 220 to meet the EES Social Science core requirement, that course cannot be counted towards the Sustainability, Environmental Policy, and Natural Resource Management Concentration. Students must earn a minimum grade of C in all courses that are included in the concentration. Students work with an academic advisor to choose the combination of concentration courses that best meets the student's academic goals. Some concentration courses may have required prerequisites which are not EES program requirements, but which must be completed before the concentration course is taken. Substitutions may be made for courses in the approved lists below with approval of the student's academic advisor and the undergraduate coordinator. For well-qualified seniors, graduate courses may also be used with the approval of the advisor and the course instructor.

Footnotes:

<sup>1</sup> Students in the Ecosystems Ecology Marine Ecosystems option must take SMS 300

<sup>2</sup> Only students in the Ecosystems Ecology Forest Ecosystems option take SFR 446

<sup>3</sup> Only students in Ecosystems Ecology Marine Ecosystems option take SMS 230

<sup>4</sup> Students in the Ecosystems Ecology Forest Ecosystems option take SFR 220

<sup>5</sup> Only students in Ecosystems Ecology Marine Ecosystems option take ERS108

<sup>6</sup> Only students in Ecosystems Ecology Marine Ecosystems option take SMS 108

<sup>7</sup> Only students in the Ecosystem Ecology Forest Ecosystems option take SFR 205

<sup>8</sup> Students in the Ecosystem Ecology Forest Ecosystems option must take SFR 400

## EARTH AND ENVIRONMENTAL SCIENCES

Students in the Earth and Environmental Sciences concentration will study in depth environmental processes from an earth science perspective with a focus on the physical and chemical processes associated with freshwater systems. Knowledge gained through this concentration will be applicable to many socially relevant environmental challenges including: climate and land use change, water quality problems, and water supply issues. This concentration is intended to prepare students for careers in environmental consulting, regulatory or conservation work in both government and NGO sectors, or to prepare students for graduate study in related areas.

### Required Courses (15 credits)

- ERS 121 - Humans and Global Change Credits: 3
- ERS 201 - Global Environmental Change Credits: 4
- MAT 126 - Calculus I Credits: 4
- PHY 111 - General Physics I Credits: 4
- **or**
- PHY 121 - Physics for Engineers and Physical Scientists I Credits: 4

### Concentration Electives (21 credits)

Students must take 21 total credits, 15 of which are 300-400 level classes.

### Environmental Earth Science (9 credits minimum)

- ERS 200 - Earth Systems Credits: 4
- ERS 210 - Geology Applied to Engineering Credits: 3
- ERS 315 - Principles of Sedimentology and Stratigraphy Credits: 4
- ERS 323 - Extreme Weather Credits: 3
- ERS 330 - Mineralogy Credits: 4
- ERS 369 - Energy Resources and Climate Change Credits: 3
- ERS 420 - Computer Scripting for Data Analysis Credits: 3
- ERS 441 - Glaciers and Our Landscape Credits: 3
- ERS 552 Geomorphology Credits: 2-3 (see Graduate Catalog for course description)

### Hydrology and Geochemistry (6 credit minimum)

- CIE 331 - Fundamentals of Environmental Engineering Credits: 3
- CIE 431 - Pollutant Fate and Transport Credits: 4
- ERS 312 - Geochemistry Credits: 3

- ERS 350 - Fresh-Water Flow Credits: 3
- ERS 512 - Low Temperature-Pressure Geochemistry Credits: 3
- ERS 580 - Intro to Hydrogeology Credits: 3  
(see Graduate Catalog for course descriptions)

### Soil and Ecological Sciences (3 credits minimum)

- BIO 468 - Lake Ecology Credits: 3
- INT 482 - (SBE, PSE) Pesticides and the Environment Credits: 3
- WLE 413 - Wetland Delineation and Mapping Credits: 4
- PSE 440 - Environmental Soil Chemistry and Plant Nutrition Credits: 3
- PSE 442 - Pedology: The Science of Soil Morphology, Genesis and Classification Credits: 3
- PSE 469 - Soil Microbiology Credits: 3
- WLE 423 - Wetland Ecology and Conservation Credits: 4

### ECOSYSTEM ECOLOGY

1. ECOSYSTEM ECOLOGY
2. ECOSYSTEM ECOLOGY - Aquatics and Wetlands Systems Option
3. ECOSYSTEM ECOLOGY - Forest Ecosystems Option
4. ECOSYSTEM ECOLOGY - Marine Ecosystems Option

There are four focus options within the Ecosystem Ecology concentrations (see 1-4 above). Building on the core courses in biological and ecological sciences, students in these concentrations study in depth natural processes and ecological interactions. They reflect the tremendous depth of faculty resources in ecology at the University of Maine and are designed to prepare students for both advanced study and professional work in ecology. Students in the EES Ecosystem Ecology Concentration may choose a generalist option with elective course selections presenting a broad array of ecosystems or a focused option on a specific ecosystem of interest to the student.

### Required courses (12 credits)

- BIO 200 - Biology of Organisms Credits: 4  
**or**
- SMS 201 - Biology of Marine Organisms Credits: 3  
**and**  
See footnote 1A
- SMS 203 - Introduction to Integrative Marine Science Credits: 1 See footnote 1A
- BIO 205 - Field Natural History of Maine Credits: 4
- MAT 122 - Pre-Calculus Credits: 4  
**or**
- MAT 126 - Calculus I Credits: 4

## Concentration Electives (20-24 credits)

### Ecosystems (8-11 credits)

- BIO 447 - Experimental Ecology Credits: 4
  - BIO 463 - River Ecology Credits: 4
  - BIO 468 - Lake Ecology Credits: 3
  - EES 475 - Field Studies in Ecology Credits: 1-3
  - SFR 407 - Forest Ecology Credits: 3
  - SFR 408 - Silviculture Credits: 3
  - SFR 409 - Forest Ecology and Silviculture Field Laboratory Credits: 2
  - SFR 508 - The Industrial Spruce-Fir Ecosystem Credits: 4 (see Graduate Catalog for description)
  - SMS 100 - Introduction to Ocean Science Credits: 3
  - SMS 352 - Semester-by-the-Sea: Marine Ecology Credits: 4
  - SMS 354 - Thinking About the Ocean: A Question-based Approach to Learning Marine Sciences Credits: 3
  - SMS 402 - Oceans and Climate Change Credits: 3
  - WLE 423 - Wetland Ecology and Conservation Credits: 4
- Note:
- Students following the Forest Ecosystems option must take SFR 407, 408 and 409 to fulfill their Ecosystems requirement.
  - Students following the Wetland and Aquatic Sciences option must take BIO 463, BIO 468, and WLE 423 to fulfill their Ecosystems requirement
  - Students following the Marine Ecosystems option must take SMS 100 and SMS 402 and one additional course from this list.

### Organismal Ecology (3-4 credits)

- BIO 430 - Ecology and Systematics of Aquatic Insects Credits: 4
- BIO 433 - Mammalogy Credits: 4
- BIO 434 - Avian Biology and Ecology Credits: 3
- BIO 455 - Biological Invasions Credits: 4
- INT 308 - (SMS,WLE) Conservation and Ecology of Marine Mammals Credits: 3
- PSE 403 - Weed Ecology and Management Credits: 3
- SFR 439 - Plant Anatomy Structure and Function Credits: 3
- SFR 522 - Physiological Ecology of Plants Credits: 3 (See Graduate Catalog for description)
- SMS 322 - Biology of Marine Vertebrates Credits: 3
- SMS 373 - Marine and Freshwater Algae Credits: 4
- SMS 422 - Biology of Fishes Credits: 3
- SMS 480 - Semester-by-the-Sea: Biology of Marine Invertebrates Credits: 4

- SMS 481 - Semester-by-the-Sea: Design of Marine Organisms: Momentum, Mass and Information Transfer Credits: 4
  - WLE 340 - Freshwater Fisheries Ecology and Management Credits: 3
  - WLE 341 - Freshwater Fisheries Laboratory Credits: 1
- Notes:
- Students following the Forest Ecosystems option must take SFR 439
  - Students following the Aquatic and Wetlands Sciences option choose from SMS 422, SMS 373, WLE 340/341 or BIO 430
  - Students following the Marine Ecosystems option choose from SMS 422, SMS 373, INT 308, SMS 322 or SMS 480

### Genetics and Evolution (3 credits)

- BIO 350 - Concepts and Applications of Genetics Credits: 3
  - BIO 462 - Principles of Genetics Credits: 3
  - BIO 465 - Evolution Credits: 3
  - SMS 425 - Applied Population Genetics Credits: 3
- Note:
- Students following the Marine Ecosystems option take SMS 425

### Additional Electives (6 credits)

Choose additional courses from the three areas above or from the list below.

- BIO 310 - Plant Biology Credits: 4
  - BIO 326 - General Entomology Credits: 4
  - BIO 329 - Vertebrate Biology Credits: 3
- and**
- BIO 331 - Vertebrate Biology Laboratory Credits: 1
  - BIO 342 - Plants in Our World Credits: 3
  - BIO 353 - Invertebrate Zoology Credits: 4
  - BIO 354 - Animal Behavior Credits: 3
  - BIO 432 - Biology of the Fungi Credits: 4
  - BIO 452 - Plant Physiology Credits: 3
  - BIO 464 - Taxonomy of Vascular Plants Credits: 4
  - BIO 476 - Paleoecology Credits: 4
  - INT 482 - (SBE, PSE) Pesticides and the Environment Credits: 3
  - PSE 440 - Environmental Soil Chemistry and Plant Nutrition Credits: 3
  - PSE 442 - Pedology: The Science of Soil Morphology, Genesis and Classification Credits: 3
  - PSE 444 - Field Soil Morphology and Classification Techniques Credits: 1
  - PSE 457 - Plant Pathology Credits: 4
  - PSE 469 - Soil Microbiology Credits: 3
  - SFR 107 - Forest Vegetation Credits: 3
  - SFR 406 - Remote Sensing Image Interpretation and Forest Mapping Credits: 3
  - SFR 409 - Forest Ecology and Silviculture Field Laboratory Credits: 2
- See footnote 2A.

Wetland and Aquatic option students see footnote 3A.

Marine Ecosystems option students see footnote 4A

- SFR 410 - Forest Regeneration Credits: 3
- SFR 439 - Plant Anatomy Structure and Function Credits: 3
- SFR 457 - Tree Pests and Disease Credits: 3
- SFR 458 - Tree Pests and Disease Lab Credits: 1
- SFR 520 - Development and Growth of Plants Credits: 3 (see Graduate catalog for description)
- SMS 321 - Introduction to Fisheries Science Credits: 3
- SMS 350 - Undergraduate Seminar Credits: 1-3
- SMS 482 - Semester-by-the-Sea: Human Impacts on the Ocean Credits: 3
- SMS 485 - Comparative Animal Physiology Credits: 3
- SMS 491 - Problems in Marine Science Credits: Ar
- SMS 497 - Independent Study in Marine Science Credits: 1-4
- WLE 413 - Wetland Delineation and Mapping Credits: 4
- WLE 323 - Introduction to Conservation Biology Credits: 3

Footnotes:

<sup>1A</sup> Only students in Ecosystems Marine Ecosystems Option take SMS 201/203

<sup>2A</sup> Students following the Forest Ecosystems option must take SFR 407, 408, and 409 to fulfill their Ecosystems requirement.

<sup>3A</sup> Students following the Wetland and Aquatic Sciences option must take BIO 463, Bio 468, and WLE 423 to fulfill their Ecosystems requirement.

<sup>4A</sup> Students following the Marine Ecosystems option must take SMS 100 and SMS 402 and one additional course from this list.

## NATURAL HISTORY AND ENVIRONMENTAL STUDIES

Natural history is a broad term involving the interest in and study of diverse aspects of the natural sciences (e.g., botany, zoology, geology, chemistry), historical geography, anthropology (human development and history within an ecological framework), and conservation. Environmental studies is an academic field that focuses on human interactions with the environment. This interdisciplinary concentration places more focus on the social sciences related to human-environment relationships and may include topics in ethics, policy, sociology, and philosophy as well as environmental sciences. Students will have familiarity with the diversity of life in all its forms to provide the foundation for a broadly trained naturalist. Building on the core courses in biological, ecological, and social sciences, students in this will be prepared for professional work in environmental non-government organizations, consulting firms, state and federal agencies, environmental education, as well as graduate study.

### Required Courses (23-24 credits)

- MAT 122 - Pre-Calculus Credits: 4
- **or**
- MAT 126 - Calculus I Credits: 4
- BIO 200 - Biology of Organisms Credits: 4
- BIO 205 - Field Natural History of Maine Credits: 4
- BIO 326 - General Entomology Credits: 4
- **or**

- BIO 353 - Invertebrate Zoology Credits: 4
- BIO 329 - Vertebrate Biology Credits: 3
- **and**
- BIO 331 - Vertebrate Biology Laboratory Credits: 1
- BIO 464 - Taxonomy of Vascular Plants Credits: 4
- **or**
- SFR 107 - Forest Vegetation Credits: 3

### Concentration Electives (18 required credits)

18 required credits, 15 of which need to be 300 or 400 level classes

### Protists, Fungi and Microbes (3-4 credits)

- BIO 432 - Biology of the Fungi Credits: 4
- BMB 300 - General Microbiology Credits: 3
- PSE 469 - Soil Microbiology Credits: 3
- PSE 457 - Plant Pathology Credits: 4
- SMS 373 - Marine and Freshwater Algae Credits: 4

### Animal diversity (6-8 credits)

- BIO 354 - Animal Behavior Credits: 3
- BIO 433 - Mammalogy Credits: 4
- BIO 434 - Avian Biology and Ecology Credits: 3
- SMS 321 - Introduction to Fisheries Science Credits: 3
- SMS 322 - Biology of Marine Vertebrates Credits: 3
- SMS 422 - Biology of Fishes Credits: 3
- WLE 340 - Freshwater Fisheries Ecology and Management Credits: 3
- **and**
- WLE 341 - Freshwater Fisheries Laboratory Credits: 1

### Ecosystem diversity (3-4 credits)

- BIO 463 - River Ecology Credits: 4
- BIO 468 - Lake Ecology Credits: 3
- EES 475 - Field Studies in Ecology Credits: 1-3
- SFR 407 - Forest Ecology Credits: 3
- SFR 508 - The Industrial Spruce-Fir Ecosystem Credits: 4 (see Graduate Catalog for course description)
- WLE 423 - Wetland Ecology and Conservation Credits: 4



## Environmental Humanities (6-8 credits)

- ANT 270 - Environmental Justice Movements in the United States Credits: 3
- ANT 420 - Human Impacts on Ancient Environments Credits: 3
- ANT 431 - Folklore, the Environment and Public Policy Credits: 3
- ANT 464 - Ecological Anthropology Credits: 3
- ANT 475 - Environmental Archaeology Credits: 3
- ECO 477 - Economics of Environmental and Resource Management Credits: 3
- ENG 238 - Nature and Literature Credits: 3
- HTY 210 - History of Maine Credits: 3
- HTY 211 - Maine and the Sea Credits: 3
- HTY 212 - Geography of Maine Credits: 3
- HTY 479 - U.S. Environmental History Credits: 3
- MES 301 - Rachel Carson, Maine, and the Environment Credits: 3
- SFR 452 - Environmental Interpretation Credits: 4
- WGS 230 - Women, Health, and the Environment Credits: 3  
(Pre-requisite of WST 101 can be waived)

## SOIL AND WATER SCIENCE

Students in this concentration will study soil biogeochemical and hydrologic processes in depth. Their understanding and skills will be useful in addressing many societal challenges, including climate and land use change, environmental protection, ecosystem services, food security, and energy production in a range of employment settings. In addition this concentration prepares students for advanced study in related areas.

### Required Courses (12 credits)

- MAT 122 - Pre-Calculus Credits: 4  
or
- MAT 126 - Calculus I Credits: 4  
Note: MAT 126 is recommended, but not required, for this concentration.
- BIO 200 - Biology of Organisms Credits: 4
- BIO 205 - Field Natural History of Maine Credits: 4

### Recommended Course

- MAT 127 - Calculus II Credits: 4

### Electives (21 credits)

(21 credits, 15 of which need to be 300 or 400 level courses.)

### Soil and Earth Science (9 credits)

- ERS 312 - Geochemistry Credits: 3
- ERS 315 - Principles of Sedimentology and Stratigraphy Credits: 4
- ERS 330 - Mineralogy Credits: 4
- PSE 320 - Soil Organic Matter Management Credits: 3
- PSE 440 - Environmental Soil Chemistry and Plant Nutrition Credits: 3
- PSE 442 - Pedology: The Science of Soil Morphology, Genesis and Classification Credits: 3
- PSE 444 - Field Soil Morphology and Classification Techniques Credits: 1
- PSE 469 - Soil Microbiology Credits: 3
- WLE 413 - Wetland Delineation and Mapping Credits: 4

### Water Science and Hydrology (6 credits)

- BIO 468 - Lake Ecology Credits: 3
- CIE 331 - Fundamentals of Environmental Engineering Credits: 3
- CIE 431 - Pollutant Fate and Transport Credits: 4
- ERS 350 - Fresh-Water Flow Credits: 3

### Additional Electives (6 credits)

Choose additional courses from the areas above or from the list below.

- EES 200 - Introduction to Safety and Environmental Management Credits: 3
- EES 450 - Principles of Environmental Science Credits: 3
- ERS 200 - Earth Systems Credits: 4
- ERS 201 - Global Environmental Change Credits: 4
- ERS 369 - Energy Resources and Climate Change Credits: 3
- ERS 420 - Computer Scripting for Data Analysis Credits: 3
- ERS 441 - Glaciers and Our Landscape Credits: 3
- INT 482 - (SBE, PSE) Pesticides and the Environment Credits: 3
- SFR 208 - Geomatics, Coordinate Geometry, and GPS Credits: 4
- SFR 406 - Remote Sensing Image Interpretation and Forest Mapping Credits: 3
- WLE 423 - Wetland Ecology and Conservation Credits: 4

## SUSTAINABILITY, ENVIRONMENTAL POLICY, AND NATURAL RESOURCE MANAGEMENT

Building on the core courses in biological, ecological, and social sciences, students in this concentration study in depth interactions between human and natural systems. This concentration reflects the tremendous depth of faculty resources in anthropology, environmental economics, environmental policy, natural resource management, human ecology, human dimensions of natural resource management, and sustainability science at the University of Maine. This concentration is designed to prepare students for both advanced study and professional work in sustainability science, environmental policy, and natural resource management.

## Recommended General Education courses

- ANT 102 - Introduction to Anthropology: Diversity of Cultures Credits: 3
- ECO 381 - Sustainable Development Principles and Policy Credits: 3  
See footnote 1B
- POS 100 - American Government Credits: 3
- POS 120 - Introduction to World Politics Credits: 3

## Required Courses (10 credits)

- MAT 122 - Pre-Calculus Credits: 4  
**or**
- MAT 126 - Calculus I Credits: 4
- ECO 100 - Intro to Economics Credits: 3  
**or**
- ECO 120 - Principles of Microeconomics Credits: 3
- ECO 377 - Introduction to Natural Resource Economics and Policy Credits: 3  
**or**
- ECO 477 - Economics of Environmental and Resource Management Credits: 3

## Concentration Electives (18 credits)

18 credits total, 15 of which must be 300-400 level courses.

Must take a minimum of one or two courses in each of these three areas (Economics, Social, and Resource Management/Policy/Ecology).

## Economics (3 credit minimum)

- ECO 405 - Sustainable Energy Economics & Policy Credits: 3
- ECO 450 - International Environmental Economics and Policy Credits: 3
- ECO 471 - Public Finance and Fiscal Policy Credits: 3
- ECO 479 - Land Use Planning Credits: 3
- SFR 444 - Forest Resources Economics Credits: 3

## Social (3 credit minimum)

- ANT 225 - Climate Change, Societies and Cultures Credits: 3
  - ANT 250 - Conservation Anthropology: The Socio-Cultural Dimension of Environmental Issues Credits: 3
  - ANT 270 - Environmental Justice Movements in the United States Credits: 3
  - ANT 464 - Ecological Anthropology Credits: 3
  - ECO 381 - Sustainable Development Principles and Policy Credits: 3
  - HTY 479 - U.S. Environmental History Credits: 3
  - SFR 220 - Environment and Society Credits: 3
  - SFR 471 - Principles of Tourism Management and Planning Credits: 3
  - WGS 230 - Women, Health, and the Environment Credits: 3
- See footnote 2B

## Resource Management/Policy/Ecology (6 credit minimum)

- BIO 455 - Biological Invasions Credits: 4
- CIE 431 - Pollutant Fate and Transport Credits: 4
- CIE 439 - Solid Waste and Air Pollution Credits: 3
- EES 475 - Field Studies in Ecology Credits: 1-3
- INT 482 - (SBE, PSE) Pesticides and the Environment Credits: 3
- POS 203 - American State and Local Government Credits: 3
- POS 282 - Introduction to American Law Credits: 3
- PSE 105 - Principles of Sustainable Agriculture Credits: 3
- PSE 121 - Human Societies, Soil and Water: The Unbreakable Link Credits: 3
- PSE 312 - Sustainable Food Systems: Challenges and Opportunities Credits: 3
- PSE 320 - Soil Organic Matter Management Credits: 3
- PSE 403 - Weed Ecology and Management Credits: 3
- WLE 413 - Wetland Delineation and Mapping Credits: 4
- SFR 208 - Geomatics, Coordinate Geometry, and GPS Credits: 4
- SFR 215 - Introduction to Forest Bioproducts and Bioenergy Credits: 3
- SFR 226 - Park Systems of the World Credits: 3
- SFR 349 - Applied Forest Ecology and Silviculture Credits: 4
- SFR 406 - Remote Sensing Image Interpretation and Forest Mapping Credits: 3
- SFR 446 - Forest Resources Policy Credits: 3
- SMS 230 - Introduction to Marine Policy and Fisheries Management Credits: 3
- WLE 230 - Introduction to Wildlife Conservation Credits: 3
- WLE 323 - Introduction to Conservation Biology Credits: 3
- WLE 445 - Management of Endangered and Threatened Species Credits: 3
- WLE 470 - Wildlife Policy and Administration Credits: 3

Footnotes:

<sup>1B</sup> Students following the Sustainability Concentration can take ECO 381 to satisfy their ethics requirement or a concentration elective, but the course cannot satisfy both requirements.

<sup>2B</sup> Prerequisite for EGS 230 can be waived.

## Individualized Concentration

In some cases, the defined concentrations may not meet the interests or career aspirations of students in the program. Students may develop and pursue an individualized concentration of study.

Individualized concentrations must deal with some aspect of ecology and environmental sciences as broadly reflected in the degree program. 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 part of natural ecosystems, this would not be an appropriate organizing concept for an individualized concentration since a degree program in wildlife ecology already exists at the University of Maine. Generally, the course work that makes up an individualized concentration should be largely drawn from courses offered at the University of Maine.

A student wishing to pursue an individualized concentration should do so in conjunction with an advisor who is a faculty member participating in the EES program. The student should prepare a brief proposal for the concentration, including a narrative explaining the organizing concept for the concentration and proposed name. The courses that will be taken to constitute the concentration should also be included. Individualized concentrations must include 21 credit hours of course work, at least 15 of which are at the 300 or 400 course level. An individualized concentration must be approved by the student’s academic advisor, the Undergraduate Coordinator, and the Director.

## Required Courses in Suggested Sequence of the B.S. in Ecology and Environmental Sciences

Sequence varies widely depending on concentration. Students and advisors should carefully review curriculum and pay close attention to the timing of courses, prerequisites, etc.

### First Year - First Semester (16 Credits)

- BIO 100 - Basic Biology Credits: 4
- ENG 101 - College Composition Credits: 3
- EES 117 - Introduction to Ecology and Environmental Sciences Credits: 2
- MAT 122 - Pre-Calculus Credits: 4
- **or**
- MAT 126 - Calculus I Credits: 4
- Gen Ed (optional)

### First Year - Second Semester (16-17 credits)

- BIO 200 - Biology of Organisms Credits: 4
- **or**
- Gen Ed Credits: 3

See footnote 1C

- EES 100 - Human Population and the Global Environment Credits: 3
- ERS 101 - Introduction to Geology Credits: 4
- **or**
- ERS 102 - Environmental Geology of Maine Credits: 4

- SFR 220 - Environment and Society Credits: 3  
**or**
- ECO 180 - Citizens, Energy & Sustainability Credits: 3
- Gen Ed or Required Concentration Course Credits: 3

## Second Year - First Semester (16 Credits)

- EES 217 - The Acadia Lessons Project: Field Problems in EES Credits: 0-1  
See footnote 2C
- WLE 200 - Ecology Credits: 3  
**or**
- SMS 300 - Marine Ecology Credits: 3  
**or**
- BIO 319 - General Ecology Credits: 3  
See footnote 3C
- SFR 222 - Environmental Communication Skills Credits: 3
- CHY 121 - Introduction to Chemistry Credits: 3  
**and**
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
  
- ENG 317 - Business and Technical Writing Credits: 3  
**or**
- ENG 212 - Persuasive and Analytical Writing Credits: 3
- Gen Ed **or** Concentration Credits: 3

## Second Year - Second Semester (14-15 credits)

- BIO 319 - General Ecology Credits: 3  
**or**
- Concentration Credits: 3
  
- CHY 122 - The Molecular Basis of Chemical Change Credits: 3  
**and**
- CHY 124 - The Molecular Basis of Chemical Change Laboratory Credits: 1
- STS 232 - Principles of Statistical Inference Credits: 3  
**or**
- WLE 220 - Introduction to Ecological Statistics Credits: 4  
**or**
- SFR 205 - Forest Measurements and Statistics Credits: 3  
See footnote 4C
- EES 140 - Soil Science Credits: 3  
**and**
- EES 141 - Soil Science Laboratory Credits: 1

### Third Year - First Semester (14-16 credits)

- EES 217 - The Acadia Lessons Project: Field Problems in EES Credits: 0-1  
See footnote 2C
- EES 324 - Environmental Protection Law and Policy Credits: 3
- ECO 381 - Sustainable Development Principles and Policy Credits: 3  
**or**
- PSE 121 - Human Societies, Soil and Water: The Unbreakable Link Credits: 3  
**or**
- PHI 232 - Environmental Ethics Credits: 3
- Concentration Courses
- Free Electives

### Third Year - Second Semester (14-16 Credits)

- SFR 400 - Applied Geographic Information Systems Credits: 4  
**or**
- ERS 230 - Earth and Climate Science Geomatics Credits: 4 (fall course) (**or** Senior Year)
- PSE 121 - Human Societies, Soil and Water: The Unbreakable Link Credits: 3  
**or**  
See footnote 5C
- PHI 232 - Environmental Ethics Credits: 3
- Concentration Courses
- Free Electives

### Fourth Year - First Semester (14-16 credits)

- EES 489 - Critical Issues in Ecology and Environmental Sciences Policy Credits: 4
- Concentration Courses
- Free Elective Courses

### Fourth Year - Second Semester (14-16 credits)

- EES 490 - Senior Seminar Credits: 3
- Concentration Courses
- Free Elective Courses

Footnotes:

<sup>1C</sup> BIO 200 required for all concentrations except for Earth and Environmental Sciences and Sustainability

<sup>2C</sup> Students can take EES 217 in the first semester of their second or third year.

<sup>3C</sup> Students in Ecosystem Ecology Marine Ecosystems must take SMS 300. BIO 319 is offered in the spring.

<sup>4C</sup> Students in Ecosystems Ecology Forest Ecosystems Option must take SFR 205

<sup>5C</sup> Students choose PSE 121 or PHI 232(spring course) or ECO 381 (fall course)

## Required Courses in Suggested Sequence for the Honors Program of the B. S. in Ecology and Environmental Sciences

Sequence varies widely depending on concentration. Students and advisors should carefully review curriculum and pay close attention to timing of courses, prerequisites, etc.

### First Year - First Semester (14 credits)

- BIO 100 - Basic Biology Credits: 4
- EES 117 - Introduction to Ecology and Environmental Sciences Credits: 2
- HON 111 - Civilizations: Past, Present and Future I Credits: 4  
See footnote 1D
- MAT 122 - Pre-Calculus Credits: 4  
**or**
- MAT 126 - Calculus I Credits: 4
- Additional Course (optional)

### First Year - Second Semester (17-18 credits)

- BIO 200 - Biology of Organisms Credits: 4  
See footnote 2D
- Gen Ed **or** Required course Credits: 3
- EES 100 - Human Population and the Global Environment Credits: 3
- ERS 101 - Introduction to Geology Credits: 4  
**or**
- ERS 102 - Environmental Geology of Maine Credits: 4
- SFR 220 - Environment and Society Credits: 3  
**or**
- ECO 180 - Citizens, Energy & Sustainability Credits: 3
- HON 112 - Civilizations: Past, Present and Future II Credits: 4

### Second Year - First Semester (17 credits)

- EES 217 - The Acadia Lessons Project: Field Problems in EES Credits: 0-1  
See footnote 3D
- WLE 200 - Ecology Credits: 3  
**or**
- SMS 300 - Marine Ecology Credits: 3  
**or**
- BIO 319 - General Ecology Credits: 3  
See footnote 4D
- SFR 222 - Environmental Communication Skills Credits: 3
- CHY 121 - Introduction to Chemistry Credits: 3  
**and**
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1



- HON 211 - Civilizations: Past, Present and Future III Credits: 4
- ENG 212 - Persuasive and Analytical Writing Credits: 3
- **or**
- ENG 317 - Business and Technical Writing Credits: 3

## Second Year - Second Semester (18-19 credits)

- BIO 319 - General Ecology Credits: 3
- **or**
- Concentration Credits: 3
- CHY 122 - The Molecular Basis of Chemical Change Credits: 3
- **and**
- CHY 124 - The Molecular Basis of Chemical Change Laboratory Credits: 1
- STS 232 - Principles of Statistical Inference Credits: 3
- **or**
- WLE 220 - Introduction to Ecological Statistics Credits: 4
- **or**
- SFR 205 - Forest Measurements and Statistics Credits: 3  
See footnote 5D
- EES 140 - Soil Science Credits: 3
- **and**
- EES 141 - Soil Science Laboratory Credits: 1
- HON 212 - Civilizations: Past, Present and Future IV Credits: 4

## Third Year - First Semester (14-16 credits)

- EES 217 - The Acadia Lessons Project: Field Problems in EES Credits: 0-1  
See footnote 3D
- EES 324 - Environmental Protection Law and Policy Credits: 3
- HON 3XX Honors Tutorial Credits: 3
- Concentration Courses
- Free Electives

## Third Year - Second Semester (14-16 credits)

- SFR 400 - Applied Geographic Information Systems Credits: 4
- **or**
- ERS 230 - Earth and Climate Science Geomatics Credits: 4 (offered in Fall)  
(can be taken senior year)
- Concentration Courses
- Free Electives

## Fourth Year - First Semester (13-15 credits)

- EES 489 - Critical Issues in Ecology and Environmental Sciences Policy Credits: 4
- HON 498 - Honors Directed Study Credits: 3
- Concentration courses
- Free Electives

## Fourth Year - Second Semester (13-15 credits)

- HON 499 - Honors Thesis Credits: 3
- Concentration Courses
- Free Electives

<sup>1D</sup> Students that don't complete the honors sequence should consult with his/her advisor to make sure general education requirements are met.

<sup>2D</sup> BIO 200 required for all concentrations except for Earth and Environmental Sciences and Sustainability

<sup>3D</sup> Students can take EES 217 in first semester of their second or third year

<sup>4D</sup> Students in the Ecosystem Ecology Marine Ecosystems Option must take SMS 300. BIO 319 is a spring course

<sup>5D</sup> Students in Ecosystem Ecology Forest Ecosystem Option must take SFR 205

## Economics

# Overview of Degree Requirements - B.A.

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** A "C-" or better is required in ECO 120, ECO 121, ECO 321, and ECO 350 (or ECO 420), . A "C" or better is required in the capstone courses (ECO 489 or approved substitute).

**Other GPA requirements to graduate:** Economics (ECO) coursework must be completed with a 2.0 cumulative average.

**Required Course(s) for fulfilling Capstone Experience:** ECO 489 or approved substitute

**Contact Information:** Karen Moffet, School of Economics, 206 Winslow Hall, (207) 581-3154.

Programs in the School 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 School 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 is a 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 required to work with their advisors on selecting appropriate economics electives in addition to the required economics core. Students are also encouraged to discuss career or graduate school preparation with their advisor.

## B.A. Requirements

Students must complete a total of 27 credits in Human Values and Social Contexts, 12 credits of which must be at the 200 level or above. A minimum of 30 credits must be completed through the University of Maine at the 300 level or higher and a minimum of 18 economics (i.e. ECO) credits must be completed through the University of Maine at the 300 level or higher. Students must complete the following:

### 1. Economics Core Courses

#### B.A Requirements

- ECO 117 - Issues and Opportunities in Economics Credits: 1 (Level 1- not required for internal or external transfers)
- ECO 120 - Principles of Microeconomics Credits: 3
- ECO 121 - Principles of Macroeconomics Credits: 3
- ECO 321 - Intermediate Macroeconomics Credits: 3
- ECO 350 - Intermediate Microeconomic Theory Credits: 3
- or
- ECO 420 - Intermediate Microeconomic Theory with Calculus Credits: 3
- ECO 366 - Applied Economic Data Analysis Credits: 3

### 2. Twenty-one (21) additional credit hours in ECO courses.

A minimum of nine (9) credits must be at the 300 level or higher, 6 of which must be at the 400 level or higher (not counting the core above or capstone). ECO 485, Introduction to Economic Statistics and Econometrics, is strongly recommended for students considering graduate study in economics.

### 3. Mathematics Requirement.

One of the following:

- MAT 115 - Applied Mathematics for Business and Economics Credits: 3
- MAT 122 - Pre-Calculus Credits: 4
- MAT 126 - Calculus I Credits: 4

### 4. Statistics Requirement.

One of the following:

- STS 215 - Introduction to Statistics for Business and Economics Credits: 3
- STS 232 - Principles of Statistical Inference Credits: 3

- STS 434 - Introduction to Statistics Credits: 4

## 5. Free Electives:

Students will complete approximately 28 credits of electives, depending on individual programs; 18 credits must be completed at the 300 level or higher though an exception will be made if a student has a double major or minor.

## A Typical Four-year Program in Economics (BA)

(Listed below is the sequence for economics courses. Students meet with their Faculty Advisor to fill in remaining schedule with General Education courses, free electives and other requirements.)

### First Year

- ECO 117 - Issues and Opportunities in Economics Credits: 1
- ECO 120 - Principles of Microeconomics Credits: 3
- ECO 121 - Principles of Macroeconomics Credits: 3
- Economics Elective Credits: 3

### Second Year

- ECO 321 - Intermediate Macroeconomics Credits: 3
- ECO 350 - Intermediate Microeconomic Theory Credits: 3
- or
- ECO 420 - Intermediate Microeconomic Theory with Calculus Credits: 3
- Economics Electives Credits: 3-6

### Third Year

- ECO 366 - Applied Economic Data Analysis Credits: 3
- Economics Elective Credits: 3-9

### Fourth Year

- ECO 489 - Senior Seminar Credits: 3 or other approved capstone
- Economics Electives Credits: 3-9

## B.S. Requirements

# Overview of Degree Requirements - B.S.

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** A "C-" or better is required in ECO 120, ECO 121, ECO 321 and ECO 420. A "C" or better is required in the capstone course (ECO 489 or approved substitute).

**Other GPA requirements to graduate:** Economics (ECO) coursework must be completed with a 2.0 cumulative average.

**Required Course(s) for fulfilling Capstone Experience:** ECO 489 or approved substitute

**Contact Information:** Karen Moffet, School of Economics, 206 Winslow Hall, (207) 581-3154.

Programs in the School 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 School 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 Science in Economics curriculum is designed to place a greater emphasis on analytical and mathematical techniques. The major offers students valuable preparation for a variety of career paths. Students may design their program 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 required to work with their advisors on selecting appropriate economics electives in addition to the required economics core. Students are also encouraged to discuss career or graduate school preparation with their advisor.

## BS Requirements:

A minimum of 30 credits must be completed through the University of Maine at the 300 level or higher and a minimum of 18 economics (i.e. ECO) credits must be completed through the University of Maine at the 300 level or higher. Students must complete the following:

### 1. Economics Core Courses

- ECO 117 - Issues and Opportunities in Economics Credits: 1
- ECO 120 - Principles of Microeconomics Credits: 3
- ECO 121 - Principles of Macroeconomics Credits: 3
- ECO 321 - Intermediate Macroeconomics Credits: 3
- ECO 366 - Applied Economic Data Analysis Credits: 3

- ECO 420 - Intermediate Microeconomic Theory with Calculus Credits: 3
- ECO 485 - Introduction to Economic Statistics and Econometrics Credits: 3 - 4
- ECO 489 - Senior Seminar Credits: 3

## 2. Twenty-one (21) credit hours of Economics (ECO) Electives

Students are required to work with their advisor to select 21 credit hours of Economics Electives. A minimum of 15 credit hours must be at the 300 level or above, 12 of which must be at the 400 level or higher.

## 3. Twenty-one (21) credit hours of Concentration Electives

Students pursuing the B.S. in Economics must declare a concentration (see below). Course should be determined with advisor, and be appropriate towards completion of a concentration. Some courses outside of the department may be used towards concentration electives. A minimum of 15 credit hours must be at the 300 level or above, 12 of which must be at the 400 level or higher.

Students will select one of the following concentration areas:

- Renewable energy economics: The purpose of this concentration is the opportunity to focus on renewable energy options and the key role economics plays in making energy decisions. Students pursuing this concentration will take pertinent policy and science/engineering courses along with key economics courses. Required course: ECO 405.
- Resource and Environmental Economics and Policy: The purpose of this concentration is to focus on the economic implications and drivers of natural resource and environmental decisions. Students pursuing this concentration will take pertinent policy and science courses along with key economics courses. Required courses: ECO 381, 477.
- Agribusiness Administration: The purpose of this concentration is to obtain the skills necessary to manage an agricultural business. Students pursuing this concentration may pursue business courses in addition to their economics work. Required course: ECO 254
- Individualized Concentration: This concentration is for advanced students who are interested in assembling a selection of courses to meet a topical focus not offered in other concentrations. For example, a student might concentrate in quantitative and statistical methods. Students taking the 4+1 program should select the individualized concentration unless other concentrations can be accommodated or preferred. This concentration must be approved by your advisor and the School of Economics director.

## 4. Mathematics Requirement

Student must complete:

- MAT 126 - Calculus I Credits: 4

## 5. Statistics Requirement

One of the following:

- STS 232 - Principles of Statistical Inference Credits: 3
- STS 434 - Introduction to Statistics Credits: 4

## 6. Free Electives:

Students will complete approximately 18 credits of free electives, depending on individual programs.

## A Typical Four-year Program in Economics (BS)

(Listed below is the sequence for economics courses. Students meet with their Faculty Advisor to fill in remaining schedule with General Education courses, free and concentration electives and other requirements.)

### First Year

- ECO 117 - Issues and Opportunities in Economics Credits: 1
- ECO 120 - Principles of Microeconomics Credits: 3
- ECO 121 - Principles of Macroeconomics Credits: 3  
Economics Elective Credits: 3-6

### Second Year

- ECO 321 - Intermediate Macroeconomics Credits: 3
- ECO 420 - Intermediate Microeconomic Theory with Calculus Credits: 3
- Economics Electives: 3-6

### Third Year

- ECO 366 - Applied Economic Data Analysis Credits: 3
- Economic Electives: 3-6

### Fourth Year

- ECO 485 - Introduction to Economic Statistics and Econometrics Credits: 3 - 4
- ECO 489 - Senior Seminar Credits: 3
- Economic Electives Credits: 3-6

## Environmental Horticulture

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate: 120**

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** A "C-" or better is required for courses with the PSE course designator for students in all horticulture concentrations.

Students in the Turfgrass Management Concentration have slightly different minimum grade requirements. These students receive an Associate of Science degree in Turfgrass Management from the University of Massachusetts, Amherst Stockbridge School of Agriculture and a Bachelor of Science degree in Environmental horticulture with a concentration in Turfgrass ma from the University of Maine. To receive both degrees, students in this concentration must receive a 'C' or better in the following courses: BIO 327, PSE 100, ENG 101, MAT 115 or MAT 122, ECO 120, PSE 221, PSE 396, PSE 457, and EES 140/141 prior to transferring to UMass.

**Other GPA requirements to graduate:** None.

Students in the Turfgrass Concentration must have at least a 2.5 GPA prior to transferring to the Stockbridge School of Agriculture.

**Required Course(s) for fulfilling Capstone Experience:** PSE 430.

**Contact Information:** Jaina Young, Undergraduate Program Coordinator, 117 Deering Hall, (207) 581-2948, [jaina.young@umit.maine.edu](mailto:jaina.young@umit.maine.edu)

The School of Food and Agriculture is the home of the Environmental Horticulture Program. Student interested in a Bachelor of Science in Environmental Horticulture may choose from one of four concentrations: horticultural business, landscape design, sustainable horticulture, and turfgrass management. This program combines theoretical knowledge and hands-on experience working with plants. Students will study a variety of course materials including landscape design, landscape management, sustainable plant production and maintenance, greenhouse management, plant and soil sciences, turfgrass management, business management, and other related areas. The program provides excellent training for a wide-range of professional opportunities in the green industry and provides a strong background for students interested in pursuing graduate education in areas such as business administration and horticultural science. Students pursuing the horticultural business concentration have the opportunity to work towards a possible 5<sup>th</sup> year Masters Degree in Business Administration after taking a few extra courses.

The Environmental Horticulture curriculum, requiring both synthesis and application of learned concepts, offers a challenging academic experience for the serious student. 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 Environmental 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, see our website for more details.

**Program Requirements:**

Courses are arranged in the recommended sequence. Each semester serves as a prerequisite for the following semester. PSE courses with a grade below a "C-" will not count towards graduation credits. Students who wish to transfer into the undergraduate program in Environmental Horticulture from other programs or institutions must have a 2.0 grade point average or above.

## Required Courses in Suggested Sequence for B.S. in Environmental Horticulture/Horticultural Business Concentration with a BUA Minor



## First Year - First Semester

- CMJ 103 - Fundamentals of Public Communication Credits: 3
- **OR**
- SFR 222 - Environmental Communication Skills Credits: 3
- ECO 120 - Principles of Microeconomics Credits: 3
- ENG 101 - College Composition Credits: 3
- NFA 117 - Issues and Opportunities Credits: 1
- PSE 100 - Plant Science Credits: 4

## First Year - Second Semester

- BUA 201 - Principles of Financial Accounting Credits: 3
- ECO 121 - Principles of Macroeconomics Credits: 3
- MAT 115 - Applied Mathematics for Business and Economics Credits: 3
- PSY 100 - General Psychology Credits: 3
- Elective Credits: 3

## Second Year - First Semester

- BMB 207 - Fundamentals of Chemistry Credits: 3
- BMB 209 - Fundamentals of Chemistry Laboratory Credits: 1
- or
- CHY 121 - Introduction to Chemistry Credits: 3
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
  
- BUA 202 - Principles of Managerial Accounting Credits: 3
- ECO 254 - Small Business Economics and Management Credits: 3
- PSE 221 - Woody Landscape Plants Credits: 4

## Second Year - Second Semester

- BUA 235 - Information Systems and Technology for Business Credits: 3
- EES 140 - Soil Science Credits: 3
- EES 141 - Soil Science Laboratory Credits: 1
- General Education: Quantitative Literacy Credits: 3
- Elective Credits: 5

## Third Year - First Semester

- BIO 327 - Introductory Applied Entomology Credits: 4
- BUA 325 - Principles of Management and Organization Credits: 3
- PSE 219 - SL: Herbaceous Landscape Plants Credits: 3

- PSE 325 - Turfgrass Management Credits: 3
- Elective Credits: 3

### Third Year - Second Semester

- BUA 270 - Marketing Credits: 3
- PSE 410 - Plant Propagation Credits: 4
- PSE 415 - Greenhouse Management Credits: 4
- General Education: Western Cultural Tradition Credits: 3
- Elective Credits: 2

### Summer

- PSE 396 - Field Experience in Plant, Soil and Environmental Sciences Credits: 1 - 16  
Students should register for 2 credits of this course

### Fourth Year - First Semester

- BUA 350 - Business Finance Credits: 3
- PHI 232 - Environmental Ethics Credits: 3
- **or**
- General Education: Ethics Credits: 3
- PSE 424 - Nursery Management Credits: 3
- PSE 457 - Plant Pathology Credits: 4

### Fourth Year - Second Semester

- ENG 317 - Business and Technical Writing Credits: 3
- PSE 430 - Environmental Horticulture Credits: 3
- General Education: Cultural Diversity and International Perspectives Credits: 3
- General Education: Artistic and Creative Expression Credits: 3
- General Education: Population and the Environment Credits: 3
- **or**
- Elective Credits: 0-3

NOTE: The number of elective credits above depends on whether the Ethics course chosen satisfies the Population and Environment General Education Requirement as well.

## Required Courses in Suggested Sequence for the B.S. in Environmental Horticulture/Landscape Design Concentration

## First Year - First Semester

- CMJ 103 - Fundamentals of Public Communication Credits: 3  
or
- SFR 222 - Environmental Communication Skills Credits: 3
- ECO 120 - Principles of Microeconomics Credits: 3
- ENG 101 - College Composition Credits: 3
- NFA 117 - Issues and Opportunities Credits: 1
- PSE 100 - Plant Science Credits: 4

## First Year - Second Semester

- ART 100 - Drawing I Credits: 3
- ECO 254 - Small Business Economics and Management Credits: 3
- PSY 100 - General Psychology Credits: 3
- General Education: Quantitative Literacy Credits: 3
- Elective Credits:3

## Second Year - First Semester

- BMB 207 - Fundamentals of Chemistry Credits: 3
- BMB 209 - Fundamentals of Chemistry Laboratory Credits: 1  
Or
- CHY 121 - Introduction to Chemistry Credits: 3
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
  
- MAT 115 - Applied Mathematics for Business and Economics Credits: 3  
Or
- MAT 122 - Pre-Calculus Credits: 4
  
- PSE 221 - Woody Landscape Plants Credits: 4
- Elective Credits: 2

## Second Year - Second Semester

- ART 110 - 2-D Design Credits: 3
- EES 140 - Soil Science Credits: 3
- EES 141 - Soil Science Laboratory Credits: 1
- PSE 328 - Landscape Design Credits: 4
- Elective Credits: 3

## Third Year - First Semester

- PSE 219 - SL: Herbaceous Landscape Plants Credits: 3
- PSE 227 - Landscape Design and Construction Techniques Credits: 4
- PSE 324 - Digital Graphic Communication Credits: 3
- PSE 325 - Turfgrass Management Credits: 3
- General Education: Cultural Diversity and International Perspectives Credits: 3

### Third Year - Second Semester

- PSE 410 - Plant Propagation Credits: 4
- PSE 415 - Greenhouse Management Credits: 4
- General Education: Western Cultural Tradition Credit: 3
- Elective Credits: 5

### Summer

- PSE 396 - Field Experience in Plant, Soil and Environmental Sciences Credits: 1 - 16  
Students should register for 2 credits of this course.

### Fourth Year - First Semester

- BIO 327 - Introductory Applied Entomology Credits: 4
- PHI 232 - Environmental Ethics Credits: 3
- Or
- PSE 424 - Nursery Management Credits: 3
- PSE 457 - Plant Pathology Credits: 4
- General Education: Ethics Credits: 3

### Fourth Year - Second Semester

- ENG 317 - Business and Technical Writing Credits: 3
- PSE 425 - Landscape Management Credits: 3
- PSE 430 - Environmental Horticulture Credits: 3
- General Education: Population and the Environment Credits: 3
- Elective Credits: 4 or 7

NOTE: The number of elective credits above depends on whether the Ethics course chosen satisfies the Population and the Environment General Education Requirement as well.

## Required Courses in Suggested Sequence for the B.S. in Environmental Horticulture/Sustainable Horticulture Concentration

## First Year - First Semester

- BIO 100 - Basic Biology Credits: 4
- ECO 120 - Principles of Microeconomics Credits: 3
- ENG 101 - College Composition Credits: 3
- NFA 117 - Issues and Opportunities Credits: 1
- PSE 100 - Plant Science Credits: 4

## First Year - Second Semester

- CMJ 103 - Fundamentals of Public Communication Credits: 3  
Or
- SFR 222 - Environmental Communication Skills Credits: 3
- ECO 254 - Small Business Economics and Management Credits: 3
- MAT 122 - Pre-Calculus Credits: 4
- General Education: Cultural Diversity and International Perspectives Credits: 3

## Second Year - First Semester

- BMB 207 - Fundamentals of Chemistry Credits: 3
- BMB 209 - Fundamentals of Chemistry Laboratory Credits: 1  
Or
- CHY 121 - Introduction to Chemistry Credits: 3
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- PSE 215 - Vegetable and Fruit Production Credits: 3
- PSE 221 - Woody Landscape Plants Credits: 4
- STS 232 - Principles of Statistical Inference Credits: 3

## Second Year - Second Semester

- BMB 208 - Elementary Physiological Chemistry Credits: 3
- BMB 210 - Elementary Physiological Chemistry Laboratory Credits: 1  
**or**
- CHY 122 - The Molecular Basis of Chemical Change Credits: 3
- CHY 124 - The Molecular Basis of Chemical Change Laboratory Credits: 1
- EES 140 - Soil Science Credits: 3
- EES 141 - Soil Science Laboratory Credits: 1
- General Education: Artistic and Creative Expression Credits: 3
- Elective Credits: 3

## Third Year - First Semester

- BIO 327 - Introductory Applied Entomology Credits: 4
- BIO 464 - Taxonomy of Vascular Plants Credits: 4
- PSE 219 - SL: Herbaceous Landscape Plants Credits: 3
- PSE 325 - Turfgrass Management Credits: 3 (odd years)
- Elective Credits: 1

### Third Year - Second Semester

- BIO 319 - General Ecology Credits: 3
- PSE 410 - Plant Propagation Credits: 4
- PSE 415 - Greenhouse Management Credits: 4
- SFR 439 - Plant Anatomy Structure and Function Credits: 3
- Elective Credits: 2

### Summer

- PSE 396 - Field Experience in Plant, Soil and Environmental Sciences Credits: 1 - 16  
Students should register for 2 credits of this course.

### Fourth Year - First Semester

- PHI 232 - Environmental Ethics Credits: 3  
**or**
- General Education: Ethics Credits: 3
- PSE 403 - Weed Ecology and Management Credits: 3  
**or**
- WLE 423 - Wetland Ecology and Conservation Credits: 4
- PSE 424 - Nursery Management Credits: 3
- PSE 457 - Plant Pathology Credits: 4

### Fourth Year - Second Semester

- ENG 317 - Business and Technical Writing Credits: 3
- PSE 430 - Environmental Horticulture Credits: 3
- General Education: Western Cultural Tradition Credits: 3
- General Education: Population and the Environment Credits: 3
- Elective Credits: 4 or 7  
NOTE: The number of elective credits above depends on whether the Ethics course chosen satisfies the Population and the Environment General Education requirement as well.

## Required Courses in Suggested Sequence for the B.S. in Environmental Horticulture/Turfgrass Management Concentration

## First Year - First Semester

- BIO 100 - Basic Biology Credits: 4
- ECO 120 - Principles of Microeconomics Credits: 3
- ENG 101 - College Composition Credits: 3
- NFA 117 - Issues and Opportunities Credits: 1
- PSE 100 - Plant Science Credits: 4

## First Year - Second Semester

- CMJ 103 - Fundamentals of Public Communication Credits: 3
- **or**
- SFR 222 - Environmental Communication Skills Credits: 3
  
- MAT 115 - Applied Mathematics for Business and Economics Credits: 3
- **or**
- MAT 122 - Pre-Calculus Credits: 4
- General Education: Western Cultural Tradition Credits: 3
- General Education: Cultural Diversity and International Perspectives Credits: 3
- Elective Business Course Credits: 3

## Second Year - First Semester

- BMB 207 - Fundamentals of Chemistry Credits: 3
- BMB 209 - Fundamentals of Chemistry Laboratory Credits: 1
- **or**
- CHY 121 - Introduction to Chemistry Credits: 3
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- BIO 327 - Introductory Applied Entomology Credits: 4
- PSE 221 - Woody Landscape Plants Credits: 4
- General Education: Quantitative Literacy Credits: 3

## Second Year - Second Semester

- ECO 254 - Small Business Economics and Management Credits: 3
- EES 140 - Soil Science Credits: 3
- EES 141 - Soil Science Laboratory Credits: 1

- PHI 232 - Environmental Ethics Credits: 3
- General Education: Artistic and Creative Expression Credits: 3
- Elective Credits: 3

### Third Year - First Semester

- PSE 219 - SL: Herbaceous Landscape Plants Credits: 3
- PSE 424 - Nursery Management Credits: 3
- PSE 457 - Plant Pathology Credits: 4
- Elective Credits: 3

### Third Year - Second Semester

- ENG 317 - Business and Technical Writing Credits: 3
- PSE 410 - Plant Propagation Credits: 4
- PSE 415 - Greenhouse Management Credits: 4
- PSE 430 - Environmental Horticulture Credits: 3

### Summer

- PSE 396 - Field Experience in Plant, Soil and Environmental Sciences Credits: 1 - 16  
Students should register for 2 credits of this course.

The following two semesters are taken at the University of Massachusetts

### Fourth Year - First Semester

- STOCKSCH 230 Introduction to Turfgrass Management Credits: 4
- STOCKSCH 310 Principles of Weed Management Credits: 3
- NRC 232 Principles of Arboriculture Credits: 3
- Electives Credits: 6

### Fourth Year - Second Semester

- STOCKSCH 104 Plant Nutrients Credits: 1.5
- STOCKSCH 107 Turfgrass Insects Credits: 2
- STOCKSCH 112 Turfgrass Pathology Lab Credits: 2



- STOCKSCH 232 Turfgrass Machinery Credits: 2
- STOCKSCH 240 Applied Calculations in Turf Credits: 2
- STOCKSCH 275 Turfgrass Physiology and Ecology Credits: 3
- STOCKSCH 340 Advanced Turfgrass Credits: 2

## NOTE:

### NOTES:

An internship experience is required and may be met by taking either PSE 396 Field Experience in Plant, Soil and Environmental Sciences (UMaine) or STOCKSCH 198T Turfgrass Internship (UMass).

Successful completion of the above sequence will result in a B.S. Degree in Environmental Horticulture with a concentration in Turfgrass Management from the University of Maine and an A.S. Degree in Turfgrass Management from the Stockbridge School of Agriculture, University of Massachusetts Amherst.

## Financial Economics

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** A "C-" or better is required in ECO 120, ECO 121, ECO 321, and ECO 420. A "C" or better is required in the capstone (ECO 489 or approved substitute)

**Other GPA requirements to graduate:** Economics (ECO) coursework must be completed with a 2.0 cumulative average.

**Required Course(s) for fulfilling Capstone Experience:** ECO 489 or approved substitute

**Contact Information:** Karen Moffet, School of Economics, 206 Winslow Hall, (207) 581-3154.

This 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. This 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.

Students are required to work with their advisors on selecting appropriate economics electives in addition to the required economics and business core. Students are also encouraged to discuss career or graduate school preparation with their advisor.

## School Requirements:

Economics majors must complete a minimum of 27 (ECO) core credits, 15 economics elective credits and 18 business (BUA) credits at the University of Maine. Students must complete the following:

### 1. Required Economics (ECO) courses:

- ECO 117 - Issues and Opportunities in Economics Credits: 1 (not required for internal or external transfers)
  - ECO 120 - Principles of Microeconomics Credits: 3
  - ECO 121 - Principles of Macroeconomics Credits: 3
  - ECO 321 - Intermediate Macroeconomics Credits: 3
  - ECO 339 - International Finance Credits: 3
  - ECO 353 - Money and Banking Credits: 3
  - ECO 366 - Applied Economic Data Analysis Credits: 3
  - ECO 420 - Intermediate Microeconomic Theory with Calculus Credits: 3
  - ECO 485 - Introduction to Economic Statistics and Econometrics Credits: 3 - 4
  - ECO 489 - Senior Seminar Credits: 3 (or other approved Capstone)
- 15 ECO Credits: 9 at the 300 level and 6 at the 400 level

## 2. Required Maine Business School courses:

- BUA 201 - Principles of Financial Accounting Credits: 3
- BUA 202 - Principles of Managerial Accounting Credits: 3
- BUA 350 - Business Finance Credits: 3
- BUA 352 - Financial Institutions Credits: 3

Two additional courses from among the following:

- BUA 351 - Valuation and Corporate Investment Decisions Credits: 3
- BUA 353 - Investment Strategy Credits: 3
- BUA 454 - Financial Derivatives Credits: 3

## 3. Mathematics requirement:

Student must complete

- MAT 126 - Calculus I Credits: 4

## 4. Statistics requirement:

One of the following statistics courses (or equivalent):

- STS 232 - Principles of Statistical Inference Credits: 3
- STS 434 - Introduction to Statistics Credits: 4

## A Typical Four-year Program in Economics (B.S. FIE)

(Listed below is the sequence for economics courses. Students meet with their Faculty Advisor to fill in remaining schedule with General Education courses, business courses, free electives and other requirements.)

## First Year

- ECO 117 - Issues and Opportunities in Economics Credits: 1
- ECO 120 - Principles of Microeconomics Credits: 3
- ECO 121 - Principles of Macroeconomics Credits: 3

## Second Year

- ECO 321 - Intermediate Macroeconomics Credits: 3
- ECO 420 - Intermediate Microeconomic Theory with Calculus Credits: 3
- Economics Electives Credits: 3-6

## Third Year

- ECO 339 - International Finance Credits: 3
- ECO 353 - Money and Banking Credits: 3
- ECO 366 - Applied Economic Data Analysis Credits: 3

## Fourth Year

- ECO 485 - Introduction to Economic Statistics and Econometrics Credits: 3 - 4
- ECO 489 - Senior Seminar Credits: 3
- Economics Electives Credits: 3-12

# Food Science and Human Nutrition

## OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate: 120**

**Minimum Cumulative GPA required to graduate: 2.0**

**Minimum Grade requirements for courses to count toward major:** Food Science and Human Nutrition majors must have a "C" or better in all required FSN courses taken.

**Other GPA requirements to graduate:** None.

**Required Course(s) for fulfilling Capstone Experience:** FSN 401 or FSN 520.

**Contact Information:** Mona Therrien, Undergraduate Program Coordinator, 5735 Hitchner Hall, (207)-581-3130, mona.therrien@umit.maine.edu

The mission of the program in Food Science and Human Nutrition is to provide undergraduate education in three concentrations: food science, human nutrition and dietetics, 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 \$35,000 to \$50,000 with an undergraduate degree (BS). Students in Food Science with a grade point average of 3.5 or above may apply for the Food Science Five-Year Combined BS/MS Degree Program in their junior year. For this five-year program, nine credits of graduate courses are taken as part of the undergraduate degree (first four years), and the remainder of graduate courses can be completed in one additional year. A sample curriculum is outlined below. More information about this option can be found in the Graduate Catalog.

Human Nutrition and Dietetics 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 and Dietetics concentration (Didactic Program in Nutrition and Dietetics) at the University of Maine is accredited by the Accreditation Council for Education in Nutrition and Dietetics of the Academy of Nutrition and Dietetics. After graduation, students are eligible to apply for an Internship Program in Nutrition and Dietetics, 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 and Dietetics majors will find that the curriculum with additional courses meets the entrance requirements for medical, dental, and veterinary schools. For Food Science students, an additional course in physics is required. For Human Nutrition and Dietetics students, additional courses in physics, chemistry and mathematics are required.

In all concentrations, students can apply for competitive scholarships within the School, and College and through professional organizations such as the Maine Nutrition Council, Academy of Nutrition and Dietetics, 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, work-study and/or work merit. Also we encourage and assist students in getting summer employment or internships in their area of interest.

The School of Food and Agriculture is the only school in the State of Maine to provide undergraduate degrees in food science and human nutrition.

The courses needed for the three concentrations in Food Science and Human Nutrition are given below. Students who are interested in these programs can contact the Undergraduate Coordinator. Students who wish to transfer into the undergraduate program in Food Science and Human Nutrition from other programs or institutions must have a 2.0 grade point average or above. Those wishing to transfer into the concentration in Human Nutrition and Dietetics must have a grade point average of 2.5 or above.

### **Bachelor of Science in Food Science and Human Nutrition with three concentrations - Food Science, Food Management, or Human Nutrition and Dietetics.**

A Bachelor of Science degree in these concentrations prepares students for professional work in either food science, food management, or human nutrition and dietetics. 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
4. NFA 117 - Issues and Opportunities
5. Biology requirement: BIO 100
6. Mathematics requirement: STS 232
7. Communications requirements: ENG 101 and 317, CMJ 103
8. Psychology requirement: PSY 100
9. Grades of C- or lower in FSN courses may not be applied towards the major.

#### **Food Management Concentration**

1. Satisfy the core requirements of the degree program
2. Satisfy the bachelor of science requirements
3. Chemistry requirements: BMB 207, 208, 209, 210
4. Food Science and Human Nutrition requirements: FSN 202, 238, 305, 340, 396, 425, 436, 440, 512, and 520
5. Mathematics requirement: MAT 115
6. Business requirements: BUA 201, 235, 325, 337, and ECO 254
7. Economics requirements: ECO 120,121
8. Other requirements: COS 103, INV 180

#### **Food Science Concentration**

1. Satisfy the core requirements of the degree program
2. Satisfy the bachelor of science requirements
3. Biology requirements: BIO 200 or BIO 208
4. Biochemistry and Microbiology Requirements: BMB 300, 305, 322, 323
5. Chemistry requirements: CHY 121, 122, 123, 124, 251, 253
6. Food Science and Human Nutrition requirements: FSN 340, 396, 425, 436, 438, 439, 450, 482, 483, 485, 486, 502, 520, 585, 587
7. Mathematics requirement: MAT 126
8. Physics requirement: PHY 111

#### **Human Nutrition and Dietetics Concentration**

1. Satisfy core requirements of the degree program
2. Satisfy the bachelor of science requirements
3. Biology requirement: BIO 208
4. Chemistry requirements: BMB 207, 208, 209, 221, 222, 322, 323
5. Food Science and Human Nutrition requirements: FSN 202, 230, 238, 265, 301, 305, 401, 410, 412, 420, 430
6. Mathematics requirement: Gen Ed Quantitative (MAT122 or 126)

7. Business requirements: ECO 120 or 121, ECO 254
8. Pathophysiology requirement: NUR 303

## Required Courses in Suggested Sequence for the B.S. in Food Science and Human Nutrition

### Food Management Concentration

#### First Year - First Semester

- BIO 100 - Basic Biology Credits: 4
- ENG 101 - College Composition Credits: 3
- FSN 101 - Introduction to Food and Nutrition Credits: 3
- NFA 117 - Issues and Opportunities Credits: 1
- PSY 100 - General Psychology Credits: 3

#### First Year - Second Semester

- CMJ 103 - Fundamentals of Public Communication Credits: 3
- COS 103 - Introduction to Spreadsheets Credits: 1
- FSN 103 - Science of Food Preparation Credits: 4
- MAT 115 - Applied Mathematics for Business and Economics Credits: 3
- General Education: Artistic and Creative Expression Credits: 3

#### Second Year - First Semester

- BUA 201 - Principles of Financial Accounting Credits: 3
- ECO 120 - Principles of Microeconomics Credits: 3
- FSN 202 - Foodservice Management Credits: 3
- FSN 305 - Foods Laboratory Credits: 1
- Elective Credits: 6

#### Second Year - Second Semester

- BUA 235 - Information Systems and Technology for Business Credits: 3
- ECO 121 - Principles of Macroeconomics Credits: 3
- ECO 254 - Small Business Economics and Management Credits: 3
- FSN 238 - Applied Food Microbiology and Sanitation Credits: 3
- General Education: Western Cultural Tradition Credits: 3

#### Third Year - First Semester

- BMB 207 - Fundamentals of Chemistry Credits: 3
- BMB 209 - Fundamentals of Chemistry Laboratory Credits: 1
- FSN 270 - World Food and Nutrition Credits: 3
- FSN 330 - Introduction to Food Science Credits: 3
- FSN 340 - Food Processing Laboratory Credits: 1
- Elective Credits: 3

### Third Year - Second Semester

- BMB 208 - Elementary Physiological Chemistry Credits: 3
- BMB 210 - Elementary Physiological Chemistry Laboratory Credits: 1
- ENG 317 - Business and Technical Writing Credits: 3
- FSN 436 - Food Law Credits: 3
- INV 180 - Create: Innovation Engineering I Credits: 3
- STS 232 - Principles of Statistical Inference Credits: 3

### Fourth Year - First Semester

- BUA 325 - Principles of Management and Organization Credits: 3
- FSN 425 - Contemporary Issues in the Food Industry Credits: 1
- FSN 520 - Food Product Development Credits: 3 (see Graduate Catalog for description)
- Elective Credits: 9

### Fourth Year - Second Semester

- BUA 337 - Production and Operations Management Credits: 3
- FSN 396 - Field Experience in Food Science and Human Nutrition Credits: 1 - 16
- FSN 440 - Utilization of Aquatic Food Resources Credits: 3
- FSN 512 - Hazard Analysis Critical Control Points Credits: 3 (see Graduate Catalog for course description)
- Elective Credits: 5

## Required Courses in Suggested Sequence for the B.S. in Food Science and Human Nutrition

### Food Science Concentration

#### First Year - First Semester

- CHY 121 - Introduction to Chemistry Credits: 3
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- FSN 101 - Introduction to Food and Nutrition Credits: 3
- MAT 126 - Calculus I Credits: 4

- NFA 117 - Issues and Opportunities Credits: 1
- PSY 100 - General Psychology Credits: 3

## First Year - Second Semester

- CHY 122 - The Molecular Basis of Chemical Change Credits: 3
- CHY 124 - The Molecular Basis of Chemical Change Laboratory Credits: 1
- CMJ 103 - Fundamentals of Public Communication Credits: 3
- ENG 101 - College Composition Credits: 3
- FSN 103 - Science of Food Preparation Credits: 4

## Second Year - First Semester

- BIO 100 - Basic Biology Credits: 4
- CHY 251 - Organic Chemistry I Credits: 3
- CHY 253 - Organic Chemistry Laboratory I Credits: 2
- FSN 330 - Introduction to Food Science Credits: 3
- FSN 340 - Food Processing Laboratory Credits: 1
- General Education: Western Cultural Tradition Credits: 3

## Second Year - Second Semester

- BIO 200 - Biology of Organisms Credits: 4
- BMB 322 - Biochemistry Credits: 3
- BMB 323 - Biochemistry Laboratory Credits: 2
- FSN 270 - World Food and Nutrition Credits: 3
- STS 232 - Principles of Statistical Inference Credits: 3

## Third Year - First Semester

- BMB 300 - General Microbiology Credits: 3
- BMB 305 - General Microbiology Laboratory Credits: 2
- FSN 502 - Food Preservation Credits: 3
- FSN 520 - Food Product Development Credits: 3  
(see Graduate Catalog for course descriptions)
- Elective Credits: 3

## Third Year - Second Semester

- ENG 317 - Business and Technical Writing Credits: 3
- FSN 438 - Food Microbiology Credits: 3



- FSN 439 - Food Microbiology Laboratory Credits: 2
- FSN 585 - Sensory Evaluation I Credits: 3 (see Graduate catalog for course description)
- Elective Credits: 3

## Fourth Year - First Semester

- FSN 396 - Field Experience in Food Science and Human Nutrition Credits: 1 - 16
- FSN 425 - Contemporary Issues in the Food Industry Credits: 1
- FSN 482 - Food Chemistry Credits: 3
- FSN 483 - Food Chemistry Laboratory Credits: 1
- PHY 111 - General Physics I Credits: 4
- General Education: Artistic and Creative Expression Credits: 3
- Elective Credits: 3

## Fourth Year - Second Semester

- FSN 436 - Food Law Credits: 3
- FSN 450 - Food Biotechnology Credits: 3
- FSN 485 - Introduction to Food Engineering Principles Credits: 3
- FSN 486 - Food Engineering Laboratory Credits: 1
- FSN 587 - Food Analysis Credits: 3 (see Graduate Catalog for course description)
- General Education: Human Values and Social Context Credits: 3

## Required Courses in Suggested Sequence for the B.S. in Food Science and Human Nutrition

### **Human Nutrition and Dietetics Concentration**

#### First Year - First Semester

- BIO 100 - Basic Biology Credits: 4
- ENG 101 - College Composition Credits: 3
- FSN 101 - Introduction to Food and Nutrition Credits: 3
- NFA 117 - Issues and Opportunities Credits: 1
- PSY 100 - General Psychology Credits: 3

#### First Year - Second Semester

- BIO 208 - Anatomy and Physiology Credits: 4
- CMJ 103 - Fundamentals of Public Communication Credits: 3
- FSN 103 - Science of Food Preparation Credits: 4
- MAT 122 - Pre-Calculus Credits: 4

**or**

- MAT 126 - Calculus I Credits: 4

## Second Year - First Semester

- BMB 207 - Fundamentals of Chemistry Credits: 3
  - BMB 209 - Fundamentals of Chemistry Laboratory Credits: 1
- or**
- CHY 121 - Introduction to Chemistry Credits: 3
  - CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- 
- FSN 202 - Foodservice Management Credits: 3
  - FSN 230 - Nutritional and Medical Terminology Credits: 1
  - General Education: Western Cultural Tradition Credits: 3
  - Elective Credits: 3

## Second Year - Second Semester

- BMB 208 - Elementary Physiological Chemistry Credits: 3
- or**
- CHY 122 - The Molecular Basis of Chemical Change Credits: 3
  - ECO 120 - Principles of Microeconomics Credits: 3
- or**
- ECO 121 - Principles of Macroeconomics Credits: 3
  - ECO 254 - Small Business Economics and Management Credits: 3
  - FSN 238 - Applied Food Microbiology and Sanitation Credits: 3
  - FSN 265 - Functional Concepts in Nutrition Credits: 3

## Third Year - First Semester

- BMB 221 - Organic Chemistry Credits: 3
  - BMB 222 - Laboratory in Organic Chemistry Credits: 1
- or**
- CHY 251 - Organic Chemistry I Credits: 3
  - CHY 253 - Organic Chemistry Laboratory I Credits: 2
- 
- FSN 301 - Life Cycle Nutrition Credits: 3
  - FSN 305 - Foods Laboratory Credits: 1
  - FSN 330 - Introduction to Food Science Credits: 3
  - Elective Credits: 6

## Third Year - Second Semester

- BMB 322 - Biochemistry Credits: 3

- BMB 323 - Biochemistry Laboratory Credits: 2
- FSN 430 - Counseling and Diet Therapy Credits: 3
- NUR 303 - Pathophysiology Credits: 3
- STS 232 - Principles of Statistical Inference Credits: 3

## Fourth Year - First Semester

- ENG 317 - Business and Technical Writing Credits: 3
- FSN 270 - World Food and Nutrition Credits: 3
- FSN 410 - Human Nutrition and Metabolism Credits: 3
- FSN 412 - Medical Nutrition Therapy I Credits: 2
- General Education: Artistic and Creative Expression Credits: 3
- Elective Credits: 3

## Fourth Year - Second Semester

- FSN 401 - Community Nutrition Credits: 4
- FSN 420 - Medical Nutrition Therapy II Credits: 4
- General Education: Human Values and Social Context Credits: 3
- General Education: Ethics Credits: 3

## Required Courses in Suggested Sequence for the Five-Year Combined BS/MS degree in Food Science and Human Nutrition

### Food Science Concentration

#### First Year - First Semester

- CHY 121 - Introduction to Chemistry Credits: 3
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- FSN 101 - Introduction to Food and Nutrition Credits: 3
- MAT 126 - Calculus I Credits: 4
- NFA 117 - Issues and Opportunities Credits: 1
- PSY 100 - General Psychology Credits: 3

#### First Year - Second Semester

- CHY 122 - The Molecular Basis of Chemical Change Credits: 3
- CHY 124 - The Molecular Basis of Chemical Change Laboratory Credits: 1
- CMJ 103 - Fundamentals of Public Communication Credits: 3
- ENG 101 - College Composition Credits: 3

- FSN 103 - Science of Food Preparation Credits: 4

## Second Year - First Semester

- BIO 100 - Basic Biology Credits: 4
- CHY 251 - Organic Chemistry I Credits: 3
- CHY 253 - Organic Chemistry Laboratory I Credits: 2
- FSN 330 - Introduction to Food Science Credits: 3
- FSN 340 - Food Processing Laboratory Credits: 1
- General Education: Western Cultural Tradition Credits: 3

## Second Year - Second Semester

- BIO 200 - Biology of Organisms Credits: 4
- BMB 322 - Biochemistry Credits: 3
- BMB 323 - Biochemistry Laboratory Credits: 2
- FSN 270 - World Food and Nutrition Credits: 3
- STS 232 - Principles of Statistical Inference Credits: 3

## Third Year - First Semester

- BMB 300 - General Microbiology Credits: 3
- BMB 305 - General Microbiology Laboratory Credits: 2
- FSN 502 - Food Preservation Credits: 3
- FSN 520 - Food Product Development Credits: 3 (see Graduate Catalog for course description)
- Elective Credits: 3

## Third Year - Second Semester

- ENG 317 - Business and Technical Writing Credits: 3
- FSN 438 - Food Microbiology Credits: 3
- FSN 439 - Food Microbiology Laboratory Credits: 2
- FSN 585 - Sensory Evaluation I Credits: 3 (see Graduate catalog for course description)
- Elective Credits: 3

## Fourth Year - First Semester

- FSN 396 - Field Experience in Food Science and Human Nutrition Credits: 1 - 16
- FSN 425 - Contemporary Issues in the Food Industry Credits: 1
- FSN 482 - Food Chemistry Credits: 3
- FSN 483 - Food Chemistry Laboratory Credits: 1
- PHY 111 - General Physics I Credits: 4
- General Education: Artistic and Creative Expression Credits: 3
- Elective Credits: 3

## Fourth Year - Second Semester

- FSN 450 - Food Biotechnology Credits: 3
- FSN 436 - Food Law Credits: 3
- FSN 485 - Introduction to Food Engineering Principles Credits: 3
- FSN 486 - Food Engineering Laboratory Credits: 1
- FSN 587 - Food Analysis Credits: 3 (see Graduate Catalog for course description)
- General Education: Human Values and Social Context Credits: 3

Awarded B.S. degree after completion of fourth year, second semester.

## Fourth Year - Summer

- FSN 695 - Food Science and Human Nutrition Practicum Credits: 3  
(see Graduate catalog for course description)

## Fifth Year - First Semester

- FSN 571 - Technical Presentations Credits: 1
- 500 level FSN course Credits: 3
- 400+ level Professional Electives Credits: 4  
(see Graduate catalog for course descriptions)

## Fifth Year - Second Semester

- 500 or 600 level FSN course Credits: 3
- 500 level elective Credits: 3
- FSN 671 - Advanced Graduate Seminar Credits: 1
- 400+ level elective Credits: 1  
(See Graduate catalog for course descriptions)

Awarded MS degree after completion of the fifth year.

## Forest Operations, Bioproducts, and Bioenergy

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** Students must earn a minimum grade of "C-" in all required courses having the SFR designator.

**Other GPA requirements to graduate:** None.

**Required Course(s) for fulfilling Capstone Experience:** SFR 492

**Contact Information:** William H. Livingston, Associate Director for Undergraduate Programs, 201b Nutting Hall, 581-2990, WilliamL@maine.edu

The interdisciplinary Bachelor of Science in Forest Operations, Bioproducts, and Bioenergy (FBB) at the University of Maine extends basic forestry training to include analysis of harvesting operations as well as forest resources utilization through a series of focused courses. Those courses focus on forest harvesting and wood uses in sawmills, pulp and paper manufacturing, composite materials and energy generation using biomass. The program covers the broad range from the basics of forest resource management through all of the major aspects of utilization. The efficient and environmentally acceptable growth, management, extraction, and transportation of timber for the manufacture of forest products are major challenges to one of the region's most important industries. The FBB program has been designed to address these challenges by combining course work, field work and faculty expertise in forest management, forest ecology, and wood science, along with an emphasis in business administration and entrepreneurship.

The Forest Operations, Bioproducts, and Bioenergy program is accredited by both the Society of American Foresters and the Society of Wood Science and Technology. It is the only program of its type in the United States to be accredited by both professional organizations.

The Forest Operations, Bioproducts, and Bioenergy program at the University of Maine retains a strong field orientation. Training in a forest setting begins with the first semester. The University's 1,270-acre Dwight B. Demeritt Forest is adjacent to the campus. In addition, the nearby Penobscot Experimental Forest and other properties owned and managed by the University, provide nearly 15,000 acres of living laboratories for forestry education and research. Maine's vibrant bioproducts industry in combination with large areas of forestland near the University provide additional opportunities for a field-based education. Students are strongly encouraged to take advantage of the numerous opportunities for summer employment with land-management organizations and the bioproducts industry. Students in the Forest Operations, Bioproducts, and Bioenergy 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 FBB faculty have active research programs, and they are involved in various outreach activities for their professions. Students learn from faculty who continually explore and extend the latest knowledge in their areas of expertise, and students meet directly with these faculty for academic advising.

The program aims to develop individuals who have (a) the knowledge and abilities to better manage timber resources and forest operations in an environment of increasing public scrutiny and environmental concern; (b) an understanding of the processes and challenges related to the efficient and environmentally acceptable harvest and processing of timber resources for materials,

chemicals, and energy; and (c) 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 with skills related to the efficient, safe, and environmentally compatible conduct of forest operations. In addition, graduates will have a thorough understanding of the timber production life cycle from the forest through the mill to the customer.

Graduates of the FBB program are 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; mill supervision and quality control; and wood products business/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 technology, and forest management.

The FBB program is part of the School of Forest Resources which has the largest scholarship endowment fund on campus for an academic unit, and the School awarded nearly \$400,000 for the 2015-16 academic year to help support undergraduate studies. Some scholarships are specifically available for students in the Forest Operations, Bioproducts, and Bioenergy program.

Under the New England Regional Student Program, administered through the New England Board of Higher Education, the Bachelor of Science in Forest Operations, Bioproducts, and Bioenergy is open to applicants who reside in Connecticut, Massachusetts, Rhode Island, or Vermont for reduced tuition (in-state tuition plus 50 percent).

The BS in Forest Operations, Bioproducts, and Bioenergy curriculum requires completion of 120 credits of coursework. Students need to complete 30 credits in 400 level SFR courses at UMaine in order to earn the degree. 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 FBB 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 final product. Examples of these subjects include: forest ecology and silviculture, timber harvest planning and administration; forest road planning and construction; timber procurement; principals of "green" manufacturing; bioenergy; and introductory business administration. During the four year program, FBB integrates the fields of forest management, forest operations, and wood science and technology into the overall context of a broad education in the liberal arts. The result is a program addressing the science, management, business, and processing and utilization of timber resources.

## Required Courses in Suggested Sequence for the B.S. in Forest Operations, Bioproducts, and Bioenergy

### First Year - First Semester

- MAT 126 - Calculus I Credits: 4
- SFR 101 - Introduction to Forest Resources Credits: 1
- SFR 103 - Introduction to Forest Resource Professions Credits: 1
- SFR 106 - Forest Land Navigation and Outdoor Preparedness Credits: 1
- SFR 107 - Forest Vegetation Credits: 3
- SFR 222 - Environmental Communication Skills Credits: 3
- or
- CMJ 103 - Fundamentals of Public Communication Credits: 3
- Elective and General Education Courses Credit: 3

### First Year - Second Semester

- CHY 121 - Introduction to Chemistry Credits: 3

- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- ECO 120 - Principles of Microeconomics Credits: 3
- ENG 101 - College Composition Credits: 3
- SFR 100 - Introduction to Forest Biology Credits: 3
- SFR 102 - Structure and Function of Woody Plants Laboratory Credits: 1

## Second Year - First Semester

- ECO 121 - Principles of Macroeconomics Credits: 3
- PHY 111 - General Physics I Credits: 4  
or
- PHY 121 - Physics for Engineers and Physical Scientists I Credits: 4
- SFR 208 - Geomatics, Coordinate Geometry, and GPS Credits: 4
- SFR 211 - Forest Operations Planning Credits: 4

## Second Year - Second Semester

- EES 140 - Soil Science Credits: 3
- SFR 205 - Forest Measurements and Statistics Credits: 3
- SFR 215 - Introduction to Forest Bioproducts and Bioenergy Credits: 3
- SFR 400 - Applied Geographic Information Systems Credits: 4
- WLE 230 - Introduction to Wildlife Conservation Credits: 3  
or
- WLE 323 - Introduction to Conservation Biology Credits: 3  
See Footnote 1

## Second Semester- May Term

- SFR 300 - Field Practice in Forest Resources Credits: 3

## Third Year - First Semester

- BUA 201 - Principles of Financial Accounting Credits: 3
- ENG 317 - Business and Technical Writing Credits: 3
- SFR 349 - Applied Forest Ecology and Silviculture Credits: 4
- SFR 450 - Processing of Biomaterials Credits: 4 (offered Fall, even years, if odd year take SFR 455)
- SFR 458 - Tree Pests and Disease Lab Credits: 1

## Third Year - Second Semester

- SFR 402 - Advanced Forest Measurements and Models Credits: 3



- SFR 453 - Biocomposite Materials Credits: 4 (offered Spring, even years)
- SFR 455 - Bioenergy Sources, Systems and Environmental Effects Credits: 3
- SFR 460 - Mill Tour Credits: 1
- BUA Elective Credit: 3

## Fourth Year - First Semester

- SFR 444 - Forest Resources Economics Credits: 3
- SFR 477 - Forest Landscape Management and Planning Credits: 3
- Technical Elective (Related to FBB, approved by advisor) Credits: 3  
Elective and General Education Courses Credits: 6

## Fourth Year - Second Semester

- SFR 446 - Forest Resources Policy Credits: 3
- SFR 464 - Forest Resources Business, Marketing and Entrepreneurship Credits: 3
- SFR 492 - Capstone Directed Study Credits: 3
- Elective and General Education Courses Credits: 3

Any student who receives a semester GPA of less than 2.0 or receives a Conduct Violation must meet with the Associate Director for Undergraduate Programs, School of Forest Resources, during the first week of the following semester to formulate an agreement on what the student will do to improve his/her record. The agreement may require passing a 1 credit course on academic recovery. The student must also meet with his/her academic advisor to review the course schedule for the coming semester. Failure to meet these expectations may result in the student being dismissed from the program.

## Footnotes

<sup>1</sup> WLE 323 is offered in the fall semester; can be switched with elective credit scheduled for fall of senior year

# Forestry

## OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** Students must earn a minimum grade of "C-" in all required courses having the SFR course designator.

**Other GPA requirements to graduate:** None.

**Required Course(s) for fulfilling Capstone Experience:** SFR 492

**Contact Information:** William H. Livingston, Associate Director for Undergraduate Programs, 201b Nutting Hall, 581-2990, WilliamL@maine.edu

Forestry is an applied science that involves conserving and 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. Computer tools, field skills, and quantitative methods provide the information necessary for foresters to make management decisions. Knowledge of forest operations and markets is another key element of sustainable forestry. Overall, a forestry student faces a challenging and stimulating education that matches human needs and desires with the sustainable capabilities of forests.

The University of Maine has the longest, continuously accredited professional forestry program in the United States. We celebrated the 100th Anniversary of the program in 2003. The B.S. in Forestry is accredited by the Society of American Foresters as a first degree in professional forestry. The goals of the degree are to combine instruction in 1) 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 which graduates can build upon throughout their careers.

The Forestry program at the University of Maine retains a strong field orientation. Training in a forest setting begins with the first semester, and continues throughout the curriculum. The program utilizes the University's 1,270-acre Dwight B. Demeritt Forest located next to the campus. In addition, the nearby Penobscot Experimental Forest and other properties owned and managed by the University, provide nearly 15,000 acres of living laboratories for forestry education and research. Large areas of public and private, industrial and non-industrial forestland near the University provide additional opportunities for a field-based education. 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 have active research programs, and they are involved in various outreach activities for the profession. Students learn from faculty who continually explore and extend the latest knowledge in their areas of forest science, and students meet directly with these faculty 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 graduates work with some aspect of forest resources management. In Maine, organizations that manage large private land holdings, are a major employer of foresters. 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. 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.

The Forestry program is part of the School of Forest Resources which has the largest scholarship endowment fund on campus for an academic unit, and the School awarded nearly \$400,000 for the 2015-16 academic year to help support undergraduate studies.

Under the New England Regional Student Program, administered through the New England Board of Higher Education, the Bachelor of Science in Forestry is open to applicants who reside in Connecticut, Massachusetts, or Rhode Island for reduced tuition (in-state tuition plus 50 percent).

The BS in Forestry curriculum requires completion of 120 credits of coursework. Students need to complete 30 credits in 400 level SFR courses at UMaine in order to earn the degree. In addition to the University's general education requirements in science, human values, communications, mathematics, and ethics, the curriculum includes forest-oriented courses in ecology, silviculture, forest growth, biology, soil science, economics, policy, operations, administration, GIS and mapping, and

protection. 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.

## Required Courses in Suggested Sequence for the B.S. in Forestry

### First Year - First Semester

- MAT 122 - Pre-Calculus Credits: 4
- SFR 101 - Introduction to Forest Resources Credits: 1
- SFR 103 - Introduction to Forest Resource Professions Credits: 1
- SFR 106 - Forest Land Navigation and Outdoor Preparedness Credits: 1
- SFR 107 - Forest Vegetation Credits: 3
  
- SFR 222 - Environmental Communication Skills Credits: 3  
or
- CMJ 103 - Fundamentals of Public Communication Credits: 3
- Elective and General Education Courses Credits:3

### First Year - Second Semester

- CHY 121 - Introduction to Chemistry Credits: 3
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- ENG 101 - College Composition Credits: 3
- SFR 100 - Introduction to Forest Biology Credits: 3
- SFR 102 - Structure and Function of Woody Plants Laboratory Credits: 1
- SFR 220 - Environment and Society Credits: 3

### Second Year - First Semester

- PHY 111 - General Physics I Credits: 4  
or
- PHY 121 - Physics for Engineers and Physical Scientists I Credits: 4
  
- SFR 208 - Geomatics, Coordinate Geometry, and GPS Credits: 4
- SFR 211 - Forest Operations Planning Credits: 4
- SFR 228 - Forest Recreation Management Credits: 3

### Second Year - Second Semester

- ECO 120 - Principles of Microeconomics Credits: 3

- EES 140 - Soil Science Credits: 3
- SFR 205 - Forest Measurements and Statistics Credits: 3
- SFR 215 - Introduction to Forest Bioproducts and Bioenergy Credits: 3
- SFR 400 - Applied Geographic Information Systems Credits: 4

## Second Semester - May Term

- SFR 300 - Field Practice in Forest Resources Credits: 3

## Third Year - First Semester

- SFR 407 - Forest Ecology Credits: 3
- SFR 408 - Silviculture Credits: 3
- SFR 409 - Forest Ecology and Silviculture Field Laboratory Credits: 2
- SFR 457 - Tree Pests and Disease Credits: 3
- SFR 458 - Tree Pests and Disease Lab Credits: 1

## Third Year - Second Semester

- SFR 402 - Advanced Forest Measurements and Models Credits: 3
- SFR 406 - Remote Sensing Image Interpretation and Forest Mapping Credits: 3
- SFR 446 - Forest Resources Policy Credits: 3
- WLE 230 - Introduction to Wildlife Conservation Credits: 3  
or
- WLE 323 - Introduction to Conservation Biology Credits: 3  
See Footnote 1
- Elective and General Education Courses Credits: 4

## Fourth Year - First Semester

- ENG 317 - Business and Technical Writing Credits: 3
- SFR 444 - Forest Resources Economics Credits: 3
- SFR 477 - Forest Landscape Management and Planning Credits: 3
- SFR 478 - Tools for Forest Management Credits: 1
- SFR Directed Electives (See Footnote 2) Credits: 3
- Elective and General Education Courses Credits: 3

## Fourth Year - Second Semester

- ERS 350 - Fresh-Water Flow Credits: 3

- SFR 464 - Forest Resources Business, Marketing and Entrepreneurship Credits: 3
- SFR 492 - Capstone Directed Study Credits: 3
- SFR Directed Electives Credits: 3

<sup>1</sup>WLE 323 is offered in the fall semester; can be switched with elective credit scheduled for fall of senior year

<sup>2</sup>Any SFR 4XX course that is not part of the forestry requirements, or other course with advisor approval

Any student who receives a semester GPA of less than 2.0 or receives a Conduct Violation must meet with the Associate Director for Undergraduate Programs, School of Forest Resources, during the first week of the following semester to formulate an agreement on what the student will do to improve his/her record. The agreement may require passing a 1 credit course on academic recovery. The student must also meet with his/her academic advisor to review the course schedule for the coming semester. Failure to meet these expectations may result in the student being dismissed from the program.

## Marine Science

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** Marine Science Majors must have a 2.0 GPA overall in all required classes. Required classes include the core curriculum and upper-level electives.

**Other GPA requirements to graduate:** None.

**Required Course(s) for fulfilling Capstone Experience:** SMS 400 and SMS 404

**Field Experience Requirement:** All students must complete 42 hours of field experience (these hours are clock hours, not credit hours). This requirement can be met by our Semester-by-the-Sea program, field-based courses, internships and/or study-abroad programs. Contact the School of Marine Sciences for details.

**Contact Information:** William Ellis, Associate Professor of Oceanography and Associate Director, 360 Aubert Hall, 207-581-4360, [wge@umit.maine.edu](mailto:wge@umit.maine.edu)

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, geology, 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 can complete the degree without a concentration, or they may select one of three concentrations: marine biology, marine physical sciences, or aquaculture. The biological concentration emphasizes ecology, behavior, physiology, genetics, and population and community structure of marine animals, plants, and microbes. The physical concentration is oriented toward physical, chemical, and geological ocean science. The aquaculture concentration focuses on the biology, nutrition, and production of finfish and shellfish. Students also learn about aquaculture engineering and the economic issues related to aquaculture. Students in each concentration learn to appreciate the oceanographic perspective, that is, the oceans

as systems of interacting components. Each concentration shares 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 each concentration 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. More information about Marine Science can be found on our web site.

The School of Marine Sciences has administrative offices in Aubert 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 of the Marine Science major**

Students must earn a minimum grade of C- in all required courses.

1. Satisfy university-wide general education requirements
2. Earn at least 120 credits
3. College: NFA 117 (marine emphasis)
4. Biology: BIO 100, BMB 280
5. Chemistry: CHY 121/122, 123/124
6. Mathematics: MAT 126 and MAT 232
7. Physics: PHY 111, 112, or PHY 121,122
8. Earth Science: SMS 108 or ERS 101 or ERS 102 or ERS 109
9. Marine Policy: SMS 230
10. Core SMS marine science courses: SMS 100, SMS 201, SMS 203, SMS 204, SMS 302, SMS 303, SMS 304, SMS 402, *plus* 15 credits of Marine Science electives at the 300+ level.
11. Senior Capstone Experience: SMS 400 and SMS 404 (Senior Capstone seminar) for a total of 4 credits taken either or both semesters of the senior year

### **Concentration in Marine Biology:**

Students who wish to declare a concentration in marine biology must meet the requirements of the Marine Science major (above) in addition to the following:

1. The 15 credits of SMS electives should be chosen from the list of SMS Marine Biology electives\* (see below). It is strongly recommended that students take at least 3 credits of marine ecology and include courses that cover primary producers, vertebrate and invertebrate organisms.
2. Organic chemistry or biochemistry: BMB 221/222 or CHY 251/253
3. Complete an additional 6 credits at the 300+ level either from the SMS Marine Biology elective list below or selected from the following list of courses: BIO 336, BIO 353, BIO 445, BIO 450, BIO 452, BIO 453, BIO 462, BIO 465, BIO 480, BMB 300/305, BMB 322, BMB 430/431, BMB 490

\* SMS Marine Biology electives include:

INT 308, INT 441, INT 484, SMS 300, SMS 306, SMS 321, SMS 322, SMS 350, SMS 352, SMS 354, SMS 373, SMS 422, SMS 425, SMS 480, SMS 481, SMS 482, SMS 485/486

### **Concentration in Marine Physical Sciences:**

Students who wish to declare a concentration in Marine Physical Sciences must meet the requirements for the Marine Science major (above) in addition to the following:

1. Mathematics: MAT 127
2. Physics: PHY 121, 122
3. An additional 15 credits that should be chosen from the list of SMS Physical Oceanography electives which include: INT 484, SMS 300 or SMS 352, SMS 325, SMS 330, SMS 333, SMS 350, SMS 410, SMS 460, SMS 481, SMS 482, SMS 490, SMS 491, SMS 520, SMS 560
4. Complete an additional 6 credits either from the SMS Physical Oceanography electives list or selected from the following list of courses: CHY 242, CHY 251, CHY 252, CHY 371, CHY 372/374, CHY 461, ERS 314, ERS 315, ERS 534, MAT 228, MAT 258, MAT 332, MAT 351, MAT 434, MAT 437, PHY 238, PHY 452, SIE 433

### **Concentration in Aquaculture:**

Students who wish to declare a concentration in aquaculture must meet the requirements of the Marine Science major (above) in addition to the following courses:

1. SMS 211, SMS 401, SMS 422, SMS 425, SMS 449, SMS 467.
2. Choose one pair: SMS 309 and SMS 409, or SMS 420 and SMS 421.

## **Required Courses in Suggested Sequence for the B.S. in Marine Science: Marine Biology Concentration**

### **First Year - First Semester**

- BIO 100 - Basic Biology Credits: 4
- ENG 101 - College Composition Credits: 3
- MAT 122 - Pre-Calculus Credits: 4
- NFA 117 - Issues and Opportunities Credits: 1
- SMS 100 - Introduction to Ocean Science Credits: 3

## First Year - Second Semester

- MAT 126 - Calculus I Credits: 4
- SMS 108 - Beaches and Coasts Credits: 3
- SMS 201 - Biology of Marine Organisms Credits: 3
- SMS 203 - Introduction to Integrative Marine Science Credits: 1
- General Education Requirement Credits: 3

## Second Year - First Semester

- CHY 121 - Introduction to Chemistry Credits: 3
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- SMS 230 - Introduction to Marine Policy and Fisheries Management Credits: 3
- STS 232 - Principles of Statistical Inference Credits: 3
- PHY 111 - General Physics I Credits: 4
- SMS Marine Science Elective Credits: 3

## Second Year - Second Semester

- CHY 122 - The Molecular Basis of Chemical Change Credits: 3
- CHY 124 - The Molecular Basis of Chemical Change Laboratory Credits: 1
- PHY 112 - General Physics II Credits: 4
- SMS 204 - Integrative Marine Science II: Physics and Chemistry of Marine Systems Credits: 2
- General Education Requirement Credits: 3

## Third Year - First Semester

- BMB 221 - Organic Chemistry Credits: 3  
with
- BMB 222 - Laboratory in Organic Chemistry Credits: 1  
or
- CHY 251 - Organic Chemistry I Credits: 3  
with
- CHY 253 - Organic Chemistry Laboratory I Credits: 2
- SMS 302 - Oceanography Credits: 3
- SMS 303 - Integrative Marine Science III: Oceanography Credits: 2
- Recommended SMS Marine Science Elective Credits: 3-4
- General Education Requirement Credits: 3

## Third Year - Second Semester

- BMB 280 - Introduction to Molecular and Cellular Biology Credits: 3



- Marine Science Electives Credits: 3-6
- General Education Requirement Credits: 3-6

## Fourth Year - First Semester

Semester by the sea (optional) may be taken first semester or either the junior or senior year (12-15 credits). Courses include:

- INT 441 Maritime History and Archaeology Credits: 3
- INT 484 Introduction to Systems Modeling Credits: 2
- SMS 350 Undergraduate Seminar Credits: 1-3
- SMS 352 Marine Ecology Credits: 4
- SMS 480 Biology of Marine Invertebrates Credits: 4
- SMS 481 Design of Marine Organisms Credits: 4
- SMS 482 Human Impacts on the Ocean Credits: 3 (alternate years)

or other fall courses:

- SMS 400 - Capstone Research Experience in Marine Science Credits: 1-4
- SMS 404 - Capstone Seminar in Marine Science Credits: 1
- General Education Requirements Credits: 3-6
- Marine Science Elective Credits: 3-6

## Fourth Year - Second Semester

- SMS 304 - Integrative Marine Science IV: Comparative Physiology, Cellular and Molecular Biology Credits: 2
- SMS 400 - Capstone Research Experience in Marine Science Credits: 1-4
- SMS 402 - Oceans and Climate Change Credits: 3
- SMS 404 - Capstone Seminar in Marine Science Credits: 1
- Marine Science Electives Credits: 3-6
- General Education Requirements Credits: 3-6

## Required Courses in Suggested Sequence for the B.S. in Marine Science: Marine Physical Sciences Concentration

### First Year - First Semester

- BIO 100 - Basic Biology Credits: 4
- CHY 121 - Introduction to Chemistry Credits: 3
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- MAT 126 - Calculus I Credits: 4
- NFA 117 - Issues and Opportunities Credits: 1
- SMS 100 - Introduction to Ocean Science Credits: 3

## First Year - Second Semester

- CHY 122 - The Molecular Basis of Chemical Change Credits: 3
- CHY 124 - The Molecular Basis of Chemical Change Laboratory Credits: 1
- ENG 101 - College Composition Credits: 3
- MAT 127 - Calculus II Credits: 4
- SMS 201 - Biology of Marine Organisms Credits: 3
- SMS 203 - Introduction to Integrative Marine Science Credits: 1

## Second Year - First Semester

- CHY 242 - Principles of Quantitative Analysis and Solution Equilibria Credits: 5
- PHY 121 - Physics for Engineers and Physical Scientists I Credits: 4
- General Education Requirement Credits: 3

## Second Year - Second Semester

- STS 232 - Principles of Statistical Inference Credits: 3
- PHY 122 - Physics for Engineers and Physical Scientists II Credits: 4
- SMS 108 - Beaches and Coasts Credits: 3
- SMS 204 - Integrative Marine Science II: Physics and Chemistry of Marine Systems Credits: 2
- SMS Marine Science physical oceanography elective Credits: 3-6  
or
- General Education Requirement Credits: 3

## Third Year - First Semester

- SMS 230 - Introduction to Marine Policy and Fisheries Management Credits: 3
- SMS 302 - Oceanography Credits: 3
- SMS 303 - Integrative Marine Science III: Oceanography Credits: 2
- SMS Marine Science Physical Oceanography elective Credits: 3-6

## Third Year - Second Semester

- BMB 280 - Introduction to Molecular and Cellular Biology Credits: 3
- SMS 330 - Descriptive Physical Oceanography Credits: 3
- SMS Marine Science physical oceanography elective Credits: 3-6
- General Education Requirements Credits: 3-6

## Fourth Year - First Semester

Semester by the sea (optional) may be taken first semester or either the junior or senior year (12-15 credits). Courses include:

- INT 441 Maritime History and Archaeology Credits: 3
- INT 484 Introduction to Systems Modeling Credits: 2
- SMS 350 Undergraduate Seminar Credits: 1-3
- SMS 352 Marine Ecology Credits: 4
- SMS 480 Biology of Marine Invertebrates Credits: 4
- SMS 481 Design of Marine Organisms Credits: 4
- SMS 482 Human Impacts on the Ocean Credits: 3 (alternate years)

or other fall courses:

- SMS 400 - Capstone Research Experience in Marine Science Credits: 1-4
- SMS 404 - Capstone Seminar in Marine Science Credits: 1
- General Education Requirements Credits: 0-6
- Integrative Marine Science course Credits: 2
- SMS Marine Science Physical Oceanography elective Credits: 3-6

## Fourth Year - Second Semester

- SMS 304 - Integrative Marine Science IV: Comparative Physiology, Cellular and Molecular Biology Credits: 2
- SMS 400 - Capstone Research Experience in Marine Science Credits: 1-4
- SMS 402 - Oceans and Climate Change Credits: 3
- SMS 404 - Capstone Seminar in Marine Science Credits: 1
- Recommended SMS Electives Credits: 3-4
- General Education Electives Credits: 6-9

## Required Courses in Suggested Sequence for the B.S. in Marine Science: Aquaculture Concentration

### First Year - First Semester

- BIO 100 - Basic Biology Credits: 4
- SMS 211 - Introduction to Aquaculture Credits: 3
- MAT 122 - Pre-Calculus Credits: 4
- NFA 117 - Issues and Opportunities Credits: 1
- SMS 100 - Introduction to Ocean Science Credits: 3

### First Year - Second Semester

- MAT 126 - Calculus I Credits: 4
- SMS 108 - Beaches and Coasts Credits: 3
- SMS 201 - Biology of Marine Organisms Credits: 3
- SMS 203 - Introduction to Integrative Marine Science Credits: 1
- ENG 101 - College Composition Credits: 3

## Second Year - First Semester

- CHY 121 - Introduction to Chemistry Credits: 3
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- SMS 230 - Introduction to Marine Policy and Fisheries Management Credits: 3
- STS 232 - Principles of Statistical Inference Credits: 3
- PHY 111 - General Physics I Credits: 4

## Second Year - Second Semester

- CHY 122 - The Molecular Basis of Chemical Change Credits: 3
- CHY 124 - The Molecular Basis of Chemical Change Laboratory Credits: 1
- PHY 112 - General Physics II Credits: 4
- SMS 204 - Integrative Marine Science II: Physics and Chemistry of Marine Systems Credits: 2
- General Education Requirement Credits: 6

## Third Year - First Semester

- SMS 302 - Oceanography Credits: 3
- SMS 303 - Integrative Marine Science III: Oceanography Credits: 2
- SMS 422 - Biology of Fishes Credits: 3
- SMS 449 - Aquaculture Systems Credits: 3
- General Education Requirement Credits: 3

## Third Year - Second Semester

- BMB 280 - Introduction to Molecular and Cellular Biology Credits: 3
- SMS 402 - Oceans and Climate Change Credits: 3
- SMS 425 - Applied Population Genetics Credits: 3
- SMS 467 - Fish Nutrition and Feeding Credits: 3
- General Education Requirement Credits: 3

## Fourth Year - First Semester

- SMS 400 - Capstone Research Experience in Marine Science Credits: 1-4
- SMS 404 - Capstone Seminar in Marine Science Credits: 1
- SMS 420 - Fish Aquaculture I Credits: 3

## Fourth Year - Second Semester

- SMS 304 - Integrative Marine Science IV: Comparative Physiology, Cellular and Molecular Biology Credits: 2
- SMS 400 - Capstone Research Experience in Marine Science Credits: 1-4
- SMS 401 - Critical Issues in Aquaculture Credits: 1
- SMS 404 - Capstone Seminar in Marine Science Credits: 1
- SMS 421 - Fish Aquaculture II Credits: 3
- General Education Requirement Credits: 6

# Medical Laboratory Sciences

## OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.5

**Minimum Grade requirements for courses to count toward major:** None.

**Other GPA requirements to graduate:** Medical Laboratory Sciences majors require a minimum cumulative 2.5 GPA in all courses required for their major to be considered for admission to the practicum at Eastern Maine Medical Center or other hospital in their senior year.

**Required Course(s) for fulfilling Capstone Experience:** BIO 426

**Contact Information:** Seanna Annis, Coordinator of Medical Laboratory Sciences, 13 Deering Hall, (207) 581-2621, seanna.annis@umit.maine.edu

Students in Medical Laboratory Sciences (Medical Technology) prepare to become medical laboratory scientists who work in the laboratory/diagnostic sector of the health professions industry and research laboratories. Students must enroll as pre-medical laboratory science 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 laboratory science students are on campus for three academic years and then spend the senior year in a ten to twelve-month medical center practicum. The University of Maine is affiliated with the School of Medical Laboratory Sciences at Eastern Maine Medical Center (EMMC) in Bangor, ME and the School of Medical Technology at the Cleveland Clinic in Cleveland, OH. Juniors in the Medical Laboratory Sciences program apply directly to the EMMC or other accredited programs for admission to the practicum. Obtaining admission

to medical facilities offering a practicum is a competitive process and a student must have a minimum GPA of 2.5 overall and 2.5 in the sciences to be considered for admission to most practicum programs. Completing coursework at the University of Maine does not guarantee a position in a practicum. For enrollment in a practicum program, students must successfully undergo a criminal background check. Laboratories hiring graduates of these programs will also conduct criminal background checks and require drug testing. After completing the practicum, students are eligible to take the accreditation examination administered by the American Society of Clinical Pathology.

For the BS in Medical Laboratory Sciences, a minimum grade of "C" is required in BIO 100 and BIO 208.

Students majoring in Medical Laboratory Sciences must earn a score of 4 or 5 in order to receive advanced placement credit for BIO 100.

### **Specific Requirements**

Students may earn the BS in Medical Laboratory Sciences by completing the curriculum outlined as follows. A minimum of 16 credits of chemistry is required by the National Accrediting Agency for Medical Laboratory Science. The senior year practicum meets the requirement for the General Education Capstone Experience and Writing Intensive in the major.

## **Chemistry Requirement**

- CHY 121 - Introduction to Chemistry Credits: 3
- CHY 122 - The Molecular Basis of Chemical Change Credits: 3
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- CHY 124 - The Molecular Basis of Chemical Change Laboratory Credits: 1
- BMB 221 - Organic Chemistry Credits: 3
- BMB 222 - Laboratory in Organic Chemistry Credits: 1
- BMB 322 - Biochemistry Credits: 3
- BMB 323 - Biochemistry Laboratory Credits: 2

## **Curriculum for the B.S. in Medical Laboratory Sciences**

Courses are arranged in the recommended sequence. See the Coordinator of the Medical Laboratory Sciences Program for variations in the order of the courses.

### **First Year - First Semester**

- BIO 100 - Basic Biology Credits: 4
- CHY 121 - Introduction to Chemistry Credits: 3
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- ENG 101 - College Composition Credits: 3
- MAT 122 - Pre-Calculus Credits: 4
- or
- MAT 126 - Calculus I Credits: 4
- NFA 117 - Issues and Opportunities Credits: 1

### **First Year - Second Semester**

- BIO 208 - Anatomy and Physiology Credits: 4
- CHY 122 - The Molecular Basis of Chemical Change Credits: 3
- CHY 124 - The Molecular Basis of Chemical Change Laboratory Credits: 1
- General Education Requirements Credits: 6

## Second Year - First Semester

- BMB 221 - Organic Chemistry Credits: 3
- BMB 222 - Laboratory in Organic Chemistry Credits: 1
- BMB 300 - General Microbiology Credits: 3
- BMB 305 - General Microbiology Laboratory Credits: 2
- General Education Requirement Credits: 6

## Second Year - Second Semester

- BMB 280 - Introduction to Molecular and Cellular Biology Credits: 3
- BMB 322 - Biochemistry Credits: 3
- BMB 323 - Biochemistry Laboratory Credits: 2
- BMB 420 - Infectious Disease Credits: 3
- BMB 421 - Infectious Disease Laboratory Credits: 2
- STS 232 - Principles of Statistical Inference Credits: 3

## Third Year - First Semester

- BMB 400 - Molecular Genetics Credits: 3
- BMB 440 - Introductory Immunology Credits: 3
- BMB 441 - Introductory Immunology Laboratory Credits: 1
- General Education Requirements or Electives Credits: 7

## Third Year - Second Semester

- BIO 405 - Medical Laboratory Methods of Infectious Disease Credits: 3
- BIO 421 - Introduction to Medical Laboratory Methods Credits: 4
- BIO 480 - Cell Biology Credits: 3
- BIO 483 - Cell Biology Laboratory Credits: 1
- General Education Requirements or Electives Credits: 5

## Fourth Year

Practicum in Medical Laboratory Sciences at Eastern Maine Medical Center or Cleveland Clinic (or another accredited program)  
- 32 credits.

## Microbiology

# OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0.

**Minimum Grade requirements for courses to count toward major:** For the Microbiology major, a "C or better" is required in "Introduction to Molecular and Cellular Biology" (BMB 280) to continue in the required, upper-level BMB courses.

**Other GPA requirements to graduate:** The Microbiology major requires a minimum GPA of 2.0 in all required BMB courses and science electives.

**Required Course(s) for fulfilling Capstone Experience:** BMB 491

**Contact Information:** Robert Gundersen, Chair, Hitchner Hall Room 117, (207) 581-2802, gundersn@maine.edu OR John Singer, Undergraduate Coordinator, Hitchner Hall, Room 280, (207) 581-2808, jsinger@maine.edu

The Microbiology program is designed to provide the student with a broad background in the biological and physical sciences and an opportunity for in depth concentration in one of the most active disciplines in the biological sciences.

### **Departmental Requirements:**

Cumulative grade point average of 2.0 in the major and a minimum grade of C in BMB 280.

### **Hands-on Experience:**

An important aspect of the Microbiology program 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 advanced laboratory courses 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 are important and mutually beneficial to the student and the faculty. Because the Department also offers M.S. and Ph.D. programs in the areas of biochemistry, microbiology, and molecular and cellular 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 will 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. Opportunities to earn academic credits while working off-campus in industry, hospitals, and research institutes also exist.



**Facilities:**

The departmental facilities for teaching and research are located in Hitchner Hall. The building contains a modern facility for teaching and research in microbiology, including specialized equipment and laboratories for teaching molecular biology, virology, pathogenic microbiology, and animal cell culture. The University's Automated DNA Sequencing Facility and the department's Zebrafish Facility are located 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 microbiologists are exceptionally numerous and varied. A career in Microbiology 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 microbiology provides an ideal preparation for further study in medical, dental, veterinary and other health-related professional schools. Students interested in these careers should register with the Health Professions Office in their first year, which provides information and assistance in selecting proper supporting courses and the application process.

**Accelerated UM/UNECOM Binary Degree Program with a B.S. in 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 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.

**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.

## Required Courses in Suggested Sequence for the B.S. in Microbiology

### First Year - First Semester

- BIO 100 - Basic Biology Credits: 4

- CHY 121 - Introduction to Chemistry Credits: 3
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- ENG 101 - College Composition Credits: 3
- MAT 126 - Calculus I Credits: 4
- NFA 117 - Issues and Opportunities Credits: 1

## First Year - Second Semester

- BIO 200 - Biology of Organisms Credits: 4
- BMB 280 - Introduction to Molecular and Cellular Biology Credits: 3
- CHY 122 - The Molecular Basis of Chemical Change Credits: 3
- CHY 124 - The Molecular Basis of Chemical Change Laboratory Credits: 1
- General Education Requirement Credits: 3

## Second Year - First Semester

- BMB 300 - General Microbiology Credits: 3
- BMB 305 - General Microbiology Laboratory Credits: 2
- CHY 251 - Organic Chemistry I Credits: 3
- CHY 253 - Organic Chemistry Laboratory I Credits: 2
- General Education Requirement Credits: 6

## Second Year - Second Semester

- BMB 322 - Biochemistry Credits: 3
- BMB 323 - Biochemistry Laboratory Credits: 2
- BMB 420 - Infectious Disease Credits: 3
- BMB 421 - Infectious Disease Laboratory Credits: 2
- CHY 252 - Organic Chemistry II Credits: 3
- CHY 254 - Organic Chemistry Laboratory II Credits: 2

## Third Year - First Semester

- BMB 400 - Molecular Genetics Credits: 3
- BMB 440 - Introductory Immunology Credits: 3
- BMB 441 - Introductory Immunology Laboratory Credits: 1

- BMB 464 - Analytical and Preparative Biochemical Laboratory Methods Credits: 4
- PHY 111 - General Physics I Credits: 4

### Third Year - Second Semester

- BMB 430 - Bacterial Physiology Credits: 3
- BMB 431 - Bacterial Physiology Laboratory Credits: 1
- **or**
- BMB 455 - Virology Credits: 3
- BMB 456 - Virology Laboratory Credits: 1
- BMB 471 - Cell Culture Laboratory Credits: 1
- STS 232 - Principles of Statistical Inference Credits: 3
- PHY 112 - General Physics II Credits: 4
- General Education Requirements Credits: 3

### Fourth Year - First Semester

- BMB 490 - Microbial Genetics Credits: 5
- BMB 491 - Biochemistry, Microbiology and Molecular Biology Research Credits: Ar
- BMB 580 - Microbiology Seminar Credits: 1 (see Graduate Catalog for course description)
- General Education Requirements Credits: 6

### Fourth Year - Second Semester

- BMB 430 - Bacterial Physiology Credits: 3
- BMB 431 - Bacterial Physiology Laboratory Credits: 1
- **or**
- BMB 455 - Virology Credits: 3
- BMB 456 - Virology Laboratory Credits: 1
- BMB 491 - Biochemistry, Microbiology and Molecular Biology Research Credits: Ar
- BMB 580 - Microbiology Seminar Credits: 1 (see Graduate Catalog for course description)
- Elective Credits: 6

## Molecular and Cellular Biology

## OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0.

**Minimum Grade requirements for courses to count toward major:** For the Molecular & Cellular Biology major, a "C or better" is required in "Introduction to Molecular and Cellular Biology" (BMB 280) to continue in the required, upper-level BMB courses.

**Other GPA requirements to graduate:** The Molecular & Cellular Biology major requires a minimum GPA of 2.0 for all required BMB courses and Science Electives.

**Required Course(s) for fulfilling Capstone Experience:** BMB 491

**Contact Information:** Robert Gundersen, Chair, Hitchner Hall Room 117, (207) 581-2802, [gundersn@maine.edu](mailto:gundersn@maine.edu)  
OR John Singer, Undergraduate Coordinator, Hitchner Hall, Room 280, (207) 581-2808, [jsinger@maine.edu](mailto:jsinger@maine.edu)

The Molecular and Cellular Biology program is designed to provide the student with a broad background in the biological and physical sciences and an opportunity for in depth concentration in one of the most active disciplines in the biological sciences.

### **Departmental Requirements:**

Cumulative grade point average of 2.0 in the major and a minimum grade of C in BMB 280.

### **Hands-on Experience:**

An important aspect of the Molecular & Cellular Biology program is the requirement for hands-on experience in the laboratory. Laboratory courses are offered in fundamental aspects of molecular biology, cellular as well as biochemistry and microbiology. Laboratory courses in some of 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 advanced laboratory courses 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 are important and mutually beneficial to the student and the faculty. Because the Department also offers M.S. and Ph.D. programs in the areas of biochemistry, microbiology, and molecular and cellular 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 will 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. Opportunities to earn academic credits while working off-campus in industry, hospitals, and research institutes also exist.

### **Facilities:**

The departmental facilities for teaching and research are located in Hitchner Hall. The building contains a modern facility for teaching and research in microbiology, including specialized equipment and laboratories for teaching molecular biology, virology, pathogenic microbiology, and animal cell culture. The University's Automated DNA Sequencing Facility and the department's Zebrafish Facility are located 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 molecular biologists are exceptionally numerous and varied. A career in Molecular Biology 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 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 Molecular and Cellular Biology provides an ideal preparation for further study in medical, dental, veterinary and other health-related professional schools. Students interested in these careers should register with the Health Professions Office in their first year, which provides information and assistance in selecting proper supporting courses and the application process.

#### **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.

## Required Courses in Suggested Sequence for the B.S. in Molecular and Cellular Biology

### First Year - First Semester

- BIO 100 - Basic Biology Credits: 4
- CHY 121 - Introduction to Chemistry Credits: 3
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- ENG 101 - College Composition Credits: 3
- MAT 126 - Calculus I Credits: 4
- NFA 117 - Issues and Opportunities Credits: 1

### First Year - Second Semester

- BIO 200 - Biology of Organisms Credits: 4
- BMB 280 - Introduction to Molecular and Cellular Biology Credits: 3
- CHY 122 - The Molecular Basis of Chemical Change Credits: 3
- CHY 124 - The Molecular Basis of Chemical Change Laboratory Credits: 1
- MAT 127 - Calculus II Credits: 4

### Second Year - First Semester

- BMB 300 - General Microbiology Credits: 3
- BMB 305 - General Microbiology Laboratory Credits: 2
- CHY 251 - Organic Chemistry I Credits: 3
- CHY 253 - Organic Chemistry Laboratory I Credits: 2
- General Education Requirements Credits: 6

## Second Year - Second Semester

- BMB 322 - Biochemistry Credits: 3
- BMB 323 - Biochemistry Laboratory Credits: 2
- CHY 252 - Organic Chemistry II Credits: 3
- CHY 254 - Organic Chemistry Laboratory II Credits: 2
- General Education Requirement Credits: 6

## Third Year - First Semester

- BIO 462 - Principles of Genetics Credits: 3
- BMB 400 - Molecular Genetics Credits: 3
- BMB 464 - Analytical and Preparative Biochemical Laboratory Methods Credits: 4
- PHY 111 - General Physics I Credits: 4

## Third Year - Second Semester

- BIO 480 - Cell Biology Credits: 3
- BMB 460 - Advanced Biochemistry Credits: 3
- PHY 112 - General Physics II Credits: 4
- STS 232 - Principles of Statistical Inference Credits: 3
- General Education Requirements Credits: 3

## Fourth Year - First Semester

- BMB 490 - Microbial Genetics Credits: 5
- BMB 491 - Biochemistry, Microbiology and Molecular Biology Research Credits: Ar
- BMB 580 or BMB 582 Seminar Credit: 1 (see Graduate Catalog for course descriptions)
- Program Elective Credits: 3
- General Education Requirements Credits: 3

## Fourth Year - Second Semester

- BMB 491 - Biochemistry, Microbiology and Molecular Biology Research Credits: Ar
- BMB 580 or BMB 582 Seminar Credits: 1 (see Graduate Catalog for course descriptions)
- Program Elective Credits: 7
- Elective Credits: 1

# Nursing

## OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 121

**Minimum Cumulative GPA required to graduate:** 3.0

**Minimum Grade requirements for courses to count toward major:** Pre-requisite and General Education courses must be passed with a minimum grade of "C" or better. All Nursing courses (NUR) must be passed at a minimum level of 75% to be given a passing grade of "C."

**Other GPA requirements to graduate:** Cumulative science GPA of 3.0. This includes BIO 100; BIO 208; BMB 207/209 or CHY 121/123, and BMB 240/241.

**Required Course(s) for fulfilling Capstone Experience:** NUR 411 or NUR 447 or NUR 455

**Contact Information:** Nancy Fishwick, Director, 217 Dunn Hall, 581-2607

The School of Nursing baccalaureate curriculum provides study in liberal arts, sciences and the nursing major. The goal of this 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 lifelong intellectual and professional development. Upon completion of the program, graduates are qualified to take the Registered Nurse licensing exam (NCLEX-RN). The baccalaureate nursing program is accredited by the Commission on Collegiate Nursing Education (CCNE) and by the Maine State Board of Nursing.

The practice of professional nursing demands a substantial knowledge of the social, behavioral and biological sciences as a theoretical base. During the first two years of the program, students take courses from a variety of disciplines, thus contributing to the development of the broadly educated professional nurse. Nursing courses, which begin in the second semester, focus on health promotion and disease prevention through the lifespan, preparing students to provide evidence-based, safe, effective nursing care in a variety of settings.

The University of Maine School of Nursing faculty are highly capable educators, clinicians, and scholars. 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 its inherent responsibilities for safe, ethical practice.

Nursing majors are required to have a health examination and certain immunizations completed with 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 before entry to NUR 201, the first clinical setting. Because clinical learning experiences take place in a variety of settings and locales, 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.

Prior to beginning the first clinical course in a hospital or other healthcare agency, all students are required to undergo a criminal background check (CBC) to enhance patient safety and protection. This is a requirement placed on the healthcare agencies by the Joint Commission on Accreditation of Healthcare Organizations (JCAHO). Criminal background checks are conducted by a private company approved or licensed to perform this service. Students are responsible for initiating the procedure to obtain the background check and assume all costs. Currently the CBC costs approximately \$40.00. A student whose CBC reveals concerns may be denied clinical placement by the assigned healthcare facility. Areas of concern may include any felony, crimes against individuals (assault, battery, sexual assault, and other related crimes), crimes involving theft, crimes involving drugs, and

misdeemeanors that could compromise the care and safety of patients. The healthcare agency makes the determination of the student's suitability for clinical placement.

In addition to purchasing course textbooks, students are required to buy lab kits for NUR 200 and NUR 301; the lab kits are available in the UMaine bookstore. The totes will also be used during community health clinical placements.

Course fee: Course fee of \$50.00 per credit hour are assessed on clinical and lab nursing courses.

The School of Nursing hosts a Recognition Ceremony on campus for graduating seniors each May and December. The cost of the event is assumed by the graduating class. Graduating seniors may wish to purchase the UMaine School of Nursing pin. The cost of the ceremony and the pin vary each year; students will be informed of current costs as they enter their final semester.

Students accepted in the nursing program must maintain a minimum science GPA of 3.0 and a cumulative GPA of 3.0 in order to progress to 200- and 300-level nursing courses. Once matriculated, students must take prerequisites and nursing courses from The University of Maine. 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. A grade of less than "C" in a second nursing course will result in dismissal from the nursing program. Nursing (NUR) courses are sequential and must be passed with a grade of "C" before progression to the next NUR courses. Refer to the School of Nursing Student Handbook for additional grading and progression policies.

#### **Nursing transfer students:**

*Internal transfer:* In order to be considered for admission by internal transfer to the nursing program, applicants must have completed at least one semester of course work with a minimum 3.0 science grade point average and a cumulative GPA of 3.0. Internal transfers must have completed at least one semester of science (BIO 100 or BMB 207/209) and MAT 111 or Statistics. Students interested in the nursing major must submit a Change of Major form along with an essay that describes the rationale for selecting the profession of nursing and the potential strengths they bring to the profession. Due to a high degree of interest in the program, the process is competitive and students with the highest likelihood of success in the program are selected. Academic performance is demonstrated by the GPA; motivation, maturity, and values essential to the professional role are assessed via the essay. Writing ability is also a consideration.

*External transfer:* Students must complete an undergraduate application, identify nursing as their preferred major and submit an essay. Review of applicants will occur in March for Fall entry only. External transfers must have a minimum GPA of 3.5 and must have completed a minimum of 30 credits in the following areas: Biology or Anatomy and Physiology, English Composition, Math and/or Statistics, and Social Sciences (such as Psychology, Sociology, Growth and Development). If an external candidate is admissible to the University, but not directly admissible to the School of Nursing, their admission to the university does not in any way assure students that they will be admitted to the nursing major. Admitted students in this category should plan to meet with the Assistant Director of the School of Nursing to determine the best course of action which might include completing one or two semesters of prerequisite course work and making application as an internal candidate. External transfer students who are directly admitted to the School of Nursing will have a letter from the Office of Admission stating this.

Due to the constraints of clinical placements, entry into nursing classes as either an internal or external transfer student may be delayed to the next available semester. When offered admission, students will be told the semester and year for their entry into nursing courses. If a student accepts admission, the time of entry will be guaranteed. Students who have completed all prerequisite courses will be given preference for earlier placement if clinical space is available. Any interruption in the planned program of study may result in delayed placement or dismissal. A student's program of study for the nursing major will reflect the curriculum and policies in place at the time of the start of nursing courses, not the time of initial admission. Students will be given the most recent School of Nursing Handbook at the time of admission but are responsible to check the on-line version for changes in policies and curriculum.

#### **Pre-Nursing Concentration**

The Pre-Nursing Program is the same as our regular nursing program, however, it is taken over a longer period time. The pre-nursing curriculum gives the student every possibility of being successful in the nursing program. The first two years prepare the student for upper level nursing courses by providing a strong scientific foundation. The students take general education, social science and elective courses which help round out the college experience. Students have the first two semesters to demonstrate their academic ability to progress in the nursing curriculum.



The pre-nursing student will begin nursing courses in the first semester of the second year.

## BSN Program of Study

### First Year-First Semester

- BIO 100 - Basic Biology Credits: 4
- BMB 207 - Fundamentals of Chemistry Credits: 3
- BMB 209 - Fundamentals of Chemistry Laboratory Credits: 1
- Or
- CHY 121 - Introduction to Chemistry Credits: 3
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- ENG 101 - College Composition Credits: 3
- FSN 101 - Introduction to Food and Nutrition Credits: 3
- NUR 101 - Issues and Opportunities in Nursing Credits: 1
- Students may choose to take BMB 207 and 209 or CHY 121 and 123.

### First Year-Second Semester

- BIO 208 - Anatomy and Physiology Credits: 4
- BMB 240 - Microbiology for the Professional Nurse Credits: 3
- BMB 241 - Microbiology for the Professional Nurse Laboratory Credits: 2
- NUR 102 - Foundations of Nursing Practice I Credits: 1
- PSY 100 - General Psychology Credits: 3
- Math Credits: 3

### Second Year-First Semester

- CHF 201 - Introduction to Child Development Credits: 3
- Or
- PSY 223 - Psychology of Childhood Credits: 3
- STS 232 - Principles of Statistical Inference Credits: 3
- NUR 103 - Foundations of Nursing Practice II Credits: 3
- NUR 165 - Introduction to Care of the Older Adult Credits: 1
- SOC 101 - Introduction to Sociology Credits: 3
- Philosophy Credits: 3
- Students can take either CHF 201 or PSY 223.

## Second Year-Second Semester

- NUR 200 - Care of Adults I Credits: 3
- NUR 201 - Care of Adults I Clinical Credits: 1
- NUR 202 - Application of Theory to Nursing Practice I Credits: 1
- NUR 265 - Human Genetics and Genomics for Nursing Practice Credits: 1
- NUR 300 - Health Assessment Through the Lifespan Credits: 4
- NUR 303 - Pathophysiology Credits: 3
- General Education Credits: 3

## Third Year-First Semester

- NUR 301 - Care of Adults II Credits: 3
- NUR 302 - Application of Theory to Nursing Practice II Credits: 1
- NUR 306 - Care of Adults II Clinical Credits: 2
- NUR 316 - Pharmacology for Nursing Practice Credits: 3
- NUR 415 - Socio-Cultural Issues in Health and Health Care Credits: 3
- General Elective Credits: 3

## Third Year-Second Semester

- NUR 310 - Health Related Research Credits: 3
- NUR 334 - Care of Adults III Credits: 3
- NUR 335 - Care of Adults III Clinical Credits: 2
- NUR 340 - Psychiatric Mental Health Nursing Credits: 3
- NUR 341 - Clinical Practice in Psychiatric Mental Health Nursing Credits: 2
- NUR 365 - Healthcare Infomatics Credits: 1

## Fourth Year-First Semester

- NUR 413 - Nursing Care Management of Women, Infants and Families Credits: 3
- NUR 414 - Maternal, Newborn, and Women's Health Nursing Clinical Credits: 1
- NUR 416 - Nursing Care Management of Children and Families Credits: 3
- NUR 417 - Nursing Care Management of Children and Families Credits: 1
- NUR 435 - Nursing Care of Patients and Families at End of Life Credits: 1
- NUR 452 - Community and Population Health Credits: 3
- NUR 453 - Community Nursing Care Management Credits: 2

## Fourth Year-Second Semester

- NUR 444 - Management and Leadership in Health Care System Credits: 3
- NUR 447 - Clinical Reflection Seminar Credits: 1

- NUR 455 - Senior Clinical Practicum Credits: 4
- Directed Nursing Elective Credits: 3
- Directed Nursing Elective Credits: 1
- General Elective

## Pre-Nursing Program of Study

### First Year-First Semester

- BIO 100 - Basic Biology Credits: 4
- ENG 101 - College Composition Credits: 3
- FSN 101 - Introduction to Food and Nutrition Credits: 3
- NUR 101 - Issues and Opportunities in Nursing Credits: 1
- Math Credits: 3

### First Year-Second Semester

- BIO 208 - Anatomy and Physiology Credits: 4
- CHF 201 - Introduction to Child Development Credits: 3  
Or
- PSY 223 - Psychology of Childhood Credits: 3
- PSY 100 - General Psychology Credits: 3
- General Education Credits: 3
- Students may take either CHF 201 or PSY 223.

### Second Year-First Semester

- BMB 207 - Fundamentals of Chemistry Credits: 3
- BMB 209 - Fundamentals of Chemistry Laboratory Credits: 1  
Or
- CHY 121 - Introduction to Chemistry Credits: 3
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- STS 232 - Principles of Statistical Inference Credits: 3
- NUR 102 - Foundations of Nursing Practice I Credits: 1
- Philosophy Credits: 3
- General Elective Credits: 3
- Students can take either BMB 207 and 209 or CHY 121 and 123.

### Second Year-Second Semester

- BMB 240 - Microbiology for the Professional Nurse Credits: 3
- BMB 241 - Microbiology for the Professional Nurse Laboratory Credits: 2
- NUR 103 - Foundations of Nursing Practice II Credits: 3
- NUR 165 - Introduction to Care of the Older Adult Credits: 1
- SOC 101 - Introduction to Sociology Credits: 3
- General Education Credits: 3

### Third Year-First Semester

- NUR 200 - Care of Adults I Credits: 3
- NUR 201 - Care of Adults I Clinical Credits: 1
- NUR 202 - Application of Theory to Nursing Practice I Credits: 1
- NUR 265 - Human Genetics and Genomics for Nursing Practice Credits: 1
- NUR 300 - Health Assessment Through the Lifespan Credits: 4
- NUR 303 - Pathophysiology Credits: 3

### Third Year-Second Semester

- NUR 301 - Care of Adults II Credits: 3
- NUR 302 - Application of Theory to Nursing Practice II Credits: 1
- NUR 306 - Care of Adults II Clinical Credits: 2
- NUR 310 - Health Related Research Credits: 3
- NUR 316 - Pharmacology for Nursing Practice Credits: 3
- NUR 365 - Healthcare Informatics Credits: 1
- NUR 404 - Fundamentals of Pharmacology Credits: 3

### Fourth Year-First Semester

- NUR 334 - Care of Adults III Credits: 3
- NUR 335 - Care of Adults III Clinical Credits: 2
- NUR 340 - Psychiatric Mental Health Nursing Credits: 3
- NUR 341 - Clinical Practice in Psychiatric Mental Health Nursing Credits: 2
- NUR 415 - Socio-Cultural Issues in Health and Health Care Credits: 3

### Fourth Year-Second Semester

- NUR 413 - Nursing Care Management of Women, Infants and Families Credits: 3
- NUR 414 - Maternal, Newborn, and Women's Health Nursing Clinical Credits: 1
- NUR 416 - Nursing Care Management of Children and Families Credits: 3
- NUR 417 - Nursing Care Management of Children and Families Credits: 1
- NUR 452 - Community and Population Health Credits: 3
- NUR 453 - Community Nursing Care Management Credits: 2

## Fifth Year-First Semester

- NUR 435 - Nursing Care of Patients and Families at End of Life Credits: 1
- NUR 444 - Management and Leadership in Health Care System Credits: 3
- NUR 447 - Clinical Reflection Seminar Credits: 1
- NUR 455 - Senior Clinical Practicum Credits: 4
- Directed Nursing Elective Credits: 3
- Directed Nursing Elective Credits: 1

## Parks, Recreation and Tourism

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** Students must earn a minimum grade of "C-" in all required courses having the SFR designator

**Other GPA requirements to graduate:** None.

**Required Course(s) for fulfilling Capstone Experience:** SFR 491, SFR 492, or SFR 493

**Concentrations:** Students need to complete requirements for one concentration.

**Contact Information:** William H. Livingston, Associate Director for Undergraduate Programs, 201b Nutting Hall, 581-2990, WilliamL@maine.edu

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 and its concentrations are 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 tourism sectors, nonprofit environmental organizations, conservation law enforcement agencies, as well as state and federal natural resource agencies. The PRT program emphasis on the integration of natural, social, and management sciences reflecting 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 in Orono, Maine, where you have easy access to the rocky coasts, and western mountains, to Acadia National Park, and Baxter State Park, to the Appalachian Trail, and to Maine's nature-based tourism community. Visits to these sites afford students unique and exciting opportunities 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 is available to students for enhancing education and

employability including field experiences, study abroad programs, and working on research projects. Field experiences are readily available in the region through many summer intern and cooperative education opportunities for valuable on-the-job-training experiences.

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, providing career counseling, and in providing a better understanding of the profession.

As with all programs in the School of Forest Resources the PRT curriculum provides students with a solid grounding in natural resource management training.

### **Bachelor of Science in Parks, Recreation and Tourism**

The program emphasizes the integration of natural and social sciences as an interdisciplinary context in which complex recreation, tourism, natural resource management, and environmental concerns must be addressed.

Parks, Recreation and Tourism is part of the School of Forest Resources which has the largest scholarship endowment fund on campus for an academic unit. These funds are available to help support academic studies in Forest Resources.

Under the New England Regional Student Program, administered through the New England Board of Higher Education, the Bachelor of Science degree in Parks, Recreation and Tourism is open to applicants who reside in Massachusetts or Rhode Island for reduced tuition (in-state tuition plus 50 percent).

Three concentrations allow a student to focus on what best meets their interests and professional goals. The Parks and Recreation Management Concentration is for students wanting careers in park and outdoor recreation settings with an emphasis on forest resource management. The curriculum for the Parks and Recreation Management Concentration is accredited by the Society of American Foresters. The Nature Based Tourism Concentration emphasizes outdoor enjoyment of forest resources and strategies for developing a successful tourism program. The Conservation Law Enforcement Concentration is for students who want careers as park and forest rangers.

All students in Parks, Recreation and Tourism need to take the core requirements. After the first 2 semesters, students need to select a concentration and complete its requirements as well.

### **Core requirements - 49 credits:**

- ECO 120 - Principles of Microeconomics Credits: 3
- ENG 101 - College Composition Credits: 3
- ENG 317 - Business and Technical Writing Credits: 3
- MAT 122 - Pre-Calculus Credits: 4
- SFR 100 - Introduction to Forest Biology Credits: 3
- SFR 101 - Introduction to Forest Resources Credits: 1
- SFR 102 - Structure and Function of Woody Plants Laboratory Credits: 1
- SFR 103 - Introduction to Forest Resource Professions Credits: 1
- SFR 106 - Forest Land Navigation and Outdoor Preparedness Credits: 1
- SFR 107 - Forest Vegetation Credits: 3
- SFR 220 - Environment and Society Credits: 3
- SFR 222 - Environmental Communication Skills Credits: 3
- SFR 228 - Forest Recreation Management Credits: 3
- SFR 349 - Applied Forest Ecology and Silviculture Credits: 4
- SFR 400 - Applied Geographic Information Systems Credits: 4

- SFR 479 - Environmental Attitudes and Behaviors Credits: 3
- SFR 480 - Wilderness and Protected Areas Management Credits: 3
- WLE 230 - Introduction to Wildlife Conservation Credits: 3
- or**
- WLE 323 - Introduction to Conservation Biology Credits: 3
- or**
- WLE 461 - Human Dimensions of Fisheries and Wildlife Conservation Credits: 3

## Parks and Recreation Management Concentration (see footnote 1) requirements - 56 or 58 credits:

- CHY 121 - Introduction to Chemistry Credits: 3
- and
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- OR**
- PHY 111 - General Physics I Credits: 4
  
- EES 140 - Soil Science Credits: 3
- SFR 150 - Introduction to Tourism Credits: 3
- SFR 205 - Forest Measurements and Statistics Credits: 3
- SFR 211 - Forest Operations Planning Credits: 4
- SFR 226 - Park Systems of the World Credits: 3
- SFR 300 - Field Practice in Forest Resources Credits: 3
- OR**
- SFR 399 - Field Experience in Parks, Recreation and Tourism Credits: Ar
- SFR 434 - Recreation Site Planning and Management Credits: 3
- SFR 444 - Forest Resources Economics Credits: 3
- SFR 446 - Forest Resources Policy Credits: 3
- SFR 452 - Environmental Interpretation Credits: 4 (fall odd yrs)
- SFR 458 - Tree Pests and Disease Lab Credits: 1
- SFR 464 - Forest Resources Business, Marketing and Entrepreneurship Credits: 3
- SFR 477 - Forest Landscape Management and Planning Credits: 3
- SFR 491 - Senior Capstone in Parks, Recreation and Tourism Credits: 3
- OR**
- SFR 492 - Capstone Directed Study Credits: 3
- SFR Directed Electives (SFR 4XX or advisor approval) Credits: 9
- SOC 101 - Introduction to Sociology Credits: 3
- OR**
- PSY 10X Basic psychology course Credits: 3

<sup>1</sup>The curriculum for the Parks and Recreation Management Concentration is accredited by the Society of American Foresters

## Nature-Based Tourism Concentration requirements - 51 credits:

- BUA 201 - Principles of Financial Accounting Credits: 3
- BUA 270 - Marketing Credits: 3
- or Additional directed elective Credits: 3
- ECO 121 - Principles of Macroeconomics Credits: 3
- ECO 422 - Rural Economic Development Credits: 3
- ERS 101 - Introduction to Geology Credits: 4
- STS 215 - Introduction to Statistics for Business and Economics Credits: 3
- **or**
- STS 232 - Principles of Statistical Inference Credits: 3
- PSY 100 - General Psychology Credits: 3
- SFR 150 - Introduction to Tourism Credits: 3
- SFR 226 - Park Systems of the World Credits: 3
- SFR 236 - Commercial Outdoor Recreation Management Credits: 3
- SFR 396 - Internship in Parks, Recreation and Tourism Credits: Ar
- SFR 399 - Field Experience in Parks, Recreation and Tourism Credits: Ar
- SFR 452 - Environmental Interpretation Credits: 4
- SFR 493 - Sustainable Tourism Planning Credits: 3
- Directed Electives Credits: 12 (Directed electives need to be related to the major, such as courses needed to complete a Business Administration minor. Advisor approval is needed for a course to meet this requirement)

## Conservation Law Enforcement Concentration requirement - 58-59 credits

- CHY 121 - Introduction to Chemistry Credits: 3
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- EES 140 - Soil Science Credits: 3
- EES 324 - Environmental Protection Law and Policy Credits: 3
- PSY 100 - General Psychology Credits: 3
- SFR 205 - Forest Measurements and Statistics Credits: 3
- SFR 208 - Geomatics, Coordinate Geometry, and GPS Credits: 4
- SFR 211 - Forest Operations Planning Credits: 4
- SFR 226 - Park Systems of the World Credits: 3
- **or**
- SFR 452 - Environmental Interpretation Credits: 4
- SFR 399 - Field Experience in Parks, Recreation and Tourism Credits: Ar
- SFR 434 - Recreation Site Planning and Management Credits: 3
- SFR 444 - Forest Resources Economics Credits: 3
- SFR 446 - Forest Resources Policy Credits: 3
- SFR 491 - Senior Capstone in Parks, Recreation and Tourism Credits: 3
- **or**
- SFR 492 - Capstone Directed Study Credits: 3
- SFR Directed Electives Credits: 6 (Directed electives need to be related to the major, such as courses recommended for admission to Conservation Law Enforcement Academics. Advisor approval is needed for a course to meet this requirement.)
- SOC 101 - Introduction to Sociology Credits: 3
- SOC 214 - Crime and Criminal Justice Credits: 3
- SOC 220 - Deviance and Social Control Credits: 3



- SOC 314 - Law and Society Credits: 3

## General Elective Courses - 12-20 credits

Students need to take general elective courses that will bring the total credit hours to at least 120 credits. One of these courses will need to satisfy the General Education Requirements for Artistic and Creative Expression

## Required Courses in Suggested Sequence for the B.S. in Parks, Recreation and Tourism

### Concentration in Parks and Recreation Management (see footnote 1)

#### First Year - First Semester

- MAT 122 - Pre-Calculus Credits: 4
- SFR 101 - Introduction to Forest Resources Credits: 1
- SFR 103 - Introduction to Forest Resource Professions Credits: 1
- SFR 106 - Forest Land Navigation and Outdoor Preparedness Credits: 1
- SFR 107 - Forest Vegetation Credits: 3
- SFR 226 - Park Systems of the World Credits: 3
- SFR 222 - Environmental Communication Skills Credits: 3
- **or**
- CMJ 103 - Fundamentals of Public Communication Credits: 3

#### First Year - Second Semester

- ENG 101 - College Composition Credits: 3
- SFR 100 - Introduction to Forest Biology Credits: 3
- SFR 102 - Structure and Function of Woody Plants Laboratory Credits: 1
- SFR 150 - Introduction to Tourism Credits: 3
- SFR 220 - Environment and Society Credits: 3
- General Education Elective in Creative and Artistic Expression Credits: 3

#### Second Year - First Semester

- CHY 121 - Introduction to Chemistry Credits: 3
- **and**
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- **or**
- PHY 111 - General Physics I Credits: 4

- ECO 120 - Principles of Microeconomics Credits: 3
- SFR 211 - Forest Operations Planning Credits: 4
- SFR 228 - Forest Recreation Management Credits: 3

## Second Year - Second Semester

- EES 140 - Soil Science Credits: 3
- SFR 205 - Forest Measurements and Statistics Credits: 3
- SFR 400 - Applied Geographic Information Systems Credits: 4
- SOC 101 - Introduction to Sociology Credits: 3
- or
- PSY 1XX - Psychology course Credits: 3
- Elective Course Credits: 3

## Second Semester - May Term

- SFR 300 - Field Practice in Forest Resources Credits: 3
- OR**
- SFR 399 - Field Experience in Parks, Recreation and Tourism Credits: Ar

## Third Year - First Semester

- ENG 317 - Business and Technical Writing Credits: 3
- SFR 349 - Applied Forest Ecology and Silviculture Credits: 4
- SFR 458 - Tree Pests and Disease Lab Credits: 1
- Directed Elective Credits: 3 see Footnote 1
- Elective Course Credits:3

## Third Year - Second Semester

- SFR 446 - Forest Resources Policy Credits: 3
- SFR 479 - Environmental Attitudes and Behaviors Credits: 3
- SFR Directed Elective Credits: 3 see Footnote 2
- WLE 230 - Introduction to Wildlife Conservation Credits: 3
- or**
- WLE 323 - Introduction to Conservation Biology Credits: 3
- or**
- WLE 461 - Human Dimensions of Fisheries and Wildlife Conservation Credits: 3  
(see Footnote 3)
- Elective Course Credits: 3

## Fourth Year - First Semester

- SFR 434 - Recreation Site Planning and Management Credits: 3
- SFR 444 - Forest Resources Economics Credits: 3
- SFR 452 - Environmental Interpretation Credits: 4
- SFR 477 - Forest Landscape Management and Planning Credits: 3

## Fourth Year - Second Semester

- SFR 464 - Forest Resources Business, Marketing and Entrepreneurship Credits: 3
- SFR 480 - Wilderness and Protected Areas Management Credits: 3
- SFR 491 - Senior Capstone in Parks, Recreation and Tourism Credits: 3
- **or**
- SFR 492 - Capstone Directed Study Credits: 3
- Directed Elective Credits: 3 See footnote<sup>3</sup>
- Elective Course Credits: 1 or 3 See footnote<sup>4</sup>

## Footnotes

<sup>1</sup>The curriculum for the Parks and Recreation Management Concentration is accredited by the Society of American Foresters.

<sup>2</sup>Any SFR 4XX course that is not part of the forestry requirements, or other course with advisor approval.

<sup>3</sup>WLE 323, WLE 461 and WLE 470 are offered in the fall semester; can be switched with elective credit scheduled for fall of senior year.

<sup>4</sup>Take the number of elective course credits needed to attain 120 credits total

## Concentration in Nature Based Tourism

### First Year - First Semester

- MAT 122 - Pre-Calculus Credits: 4
- SFR 101 - Introduction to Forest Resources Credits: 1
- SFR 103 - Introduction to Forest Resource Professions Credits: 1
- SFR 106 - Forest Land Navigation and Outdoor Preparedness Credits: 1
- SFR 107 - Forest Vegetation Credits: 3
- SFR 222 - Environmental Communication Skills Credits: 3
- **or**
- CMJ 103 - Fundamentals of Public Communication Credits: 3
- Elective Course Credits: 3

## First Year - Second Semester

- ENG 101 - College Composition Credits: 3
- ECO 120 - Principles of Microeconomics Credits: 3
- SFR 100 - Introduction to Forest Biology Credits: 3
- SFR 102 - Structure and Function of Woody Plants Laboratory Credits: 1
- SFR 150 - Introduction to Tourism Credits: 3
- SFR 220 - Environment and Society Credits: 3

## Second Year - First Semester

- BUA 201 - Principles of Financial Accounting Credits: 3
- ECO 121 - Principles of Macroeconomics Credits: 3
- ERS 101 - Introduction to Geology Credits: 4
- SFR 226 - Park Systems of the World Credits: 3
- SFR 228 - Forest Recreation Management Credits: 3

## Second Year - Second Semester

- BUA 270 - Marketing Credits: 3
- **or**
- Directed Elective Credits: 3 See Footnote 1
- STS 215 - Introduction to Statistics for Business and Economics Credits: 3
- **or**
- STS 232 - Principles of Statistical Inference Credits: 3
  
- PSY 100 - General Psychology Credits: 3
- SFR 400 - Applied Geographic Information Systems Credits: 4
- General Education Elective in Creative and Artistic Expression Credits: 3

## Second Semester - Summer Term

- SFR 396 - Internship in Parks, Recreation and Tourism Credits: Ar
- SFR 399 - Field Experience in Parks, Recreation and Tourism Credits: Ar

## Third Year - First Semester

- ENG 317 - Business and Technical Writing Credits: 3
- SFR 236 - Commercial Outdoor Recreation Management Credits: 3
- SFR 349 - Applied Forest Ecology and Silviculture Credits: 4
- Directed Electives Credits: 3 see Footnote 1

### Third Year - Second Semester

- ECO 422 - Rural Economic Development Credits: 3
- SFR 479 - Environmental Attitudes and Behaviors Credits: 3
- WLE 230 - Introduction to Wildlife Conservation Credits: 3  
or
- WLE 323 - Introduction to Conservation Biology Credits: 3  
or
- WLE 461 - Human Dimensions of Fisheries and Wildlife Conservation Credits: 3  
see Footnote 2
- Directed Electives Credits: 6 see Footnote 1

### Fourth Year - First Semester

- SFR 452 - Environmental Interpretation Credits: 4
- Directed Elective Credits: 3 see Footnote 1
- Elective Course Credits: 8

### Fourth Year - Second Semester

- SFR 480 - Wilderness and Protected Areas Management Credits: 3
- SFR 493 - Sustainable Tourism Planning Credits: 3
- Elective Course Credits: 6

### Footnotes

1. Directed electives need to be related to the major, such as courses needed to complete a Business Administration minor. Advisor approval is needed for a course to meet this requirement.
2. WLE 323, WLE 461, and WLE 470 are offered in the fall semester; can be switched with elective credit scheduled for fall of senior year.

### Concentration in Conservation Law Enforcement

## First Year - First Semester

- ENG 101 - College Composition Credits: 3
- MAT 122 - Pre-Calculus Credits: 4
- SFR 101 - Introduction to Forest Resources Credits: 1
- SFR 103 - Introduction to Forest Resource Professions Credits: 1
- SFR 106 - Forest Land Navigation and Outdoor Preparedness Credits: 1
- SFR 107 - Forest Vegetation Credits: 3
- SFR 222 - Environmental Communication Skills Credits: 3
- **or**
- CMJ 103 - Fundamentals of Public Communication Credits: 3

## First Year - Second Semester

- CHY 121 - Introduction to Chemistry Credits: 3
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- SFR 100 - Introduction to Forest Biology Credits: 3
- SFR 102 - Structure and Function of Woody Plants Laboratory Credits: 1
- SFR 220 - Environment and Society Credits: 3
- SOC 101 - Introduction to Sociology Credits: 3

## Second Year - First Semester

- SFR 208 - Geomatics, Coordinate Geometry, and GPS Credits: 4
- SFR 211 - Forest Operations Planning Credits: 4
- SFR 228 - Forest Recreation Management Credits: 3
- SOC 214 - Crime and Criminal Justice Credits: 3

## Second Year - Second Semester

- EES 140 - Soil Science Credits: 3
- PSY 100 - General Psychology Credits: 3
- SFR 205 - Forest Measurements and Statistics Credits: 3
- SFR 400 - Applied Geographic Information Systems Credits: 4
- SOC 220 - Deviance and Social Control Credits: 3

## Second Year - Summer Term

- SFR 399 - Field Experience in Parks, Recreation and Tourism Credits: Ar

### Third Year - First Semester

- ECO 120 - Principles of Microeconomics Credits: 3
- EES 324 - Environmental Protection Law and Policy Credits: 3
- SFR 434 - Recreation Site Planning and Management Credits: 3
- SOC 314 - Law and Society Credits: 3
- WLE 323 - Introduction to Conservation Biology Credits: 3
- or**
- WLE 461 - Human Dimensions of Fisheries and Wildlife Conservation Credits: 3

### Third Year - Second Semester

- ENG 317 - Business and Technical Writing Credits: 3
- SFR 479 - Environmental Attitudes and Behaviors Credits: 3
- General Education Elective in Creative and Artistic Expression Credits: 3
- Directed Elective Course Credits: 3 (see footnote 1)
- Elective Course Credits: 3

### Fourth Year - First Semester

- SFR 226 - Park Systems of the World Credits: 3
- or**
- SFR 452 - Environmental Interpretation Credits: 4
- SFR 349 - Applied Forest Ecology and Silviculture Credits: 4
- SFR 444 - Forest Resources Economics Credits: 3
- Directed Elective Course Credits: 3 (see footnote 1)

### Fourth Year - Second Semester

- SFR 446 - Forest Resources Policy Credits: 3
- SFR 480 - Wilderness and Protected Areas Management Credits: 3
- SFR 491 - Senior Capstone in Parks, Recreation and Tourism Credits: 3
- or**
- SFR 492 - Capstone Directed Study Credits: 3
- Elective Course Credits: 6-7 See Footnote 2

## Footnotes

1. Directed electives need to be related to the major, such as courses needed to complete a Business Administration minor. Advisor approval is needed for a course to meet this requirement.
2. Take enough elective credits to bring the total credits to 120.

## Note

Any student who receives a semester GPA of less than 2.0 or receives a Conduct Violation must meet the Associate Director for Undergraduate Programs, School of Forest Resources, during the first week of the following semester to formulate an agreement on what the student will do to improve his/her record. The agreement may require passing a 1 credit course on academic recovery. The student must also meet with his/her academic advisor to review the course schedule for the coming semester. Failure to meet these expectations may result in the student being dismissed from the program.

# Social Work

## OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.5

**Minimum Grade requirements for courses to count toward major:** Grade of C or better in required Social Work courses. Grade of C- or better in required prerequisite courses.

**Other GPA requirements to graduate:** None.

**Required Course(s) for fulfilling Capstone Experience:** 12 credits of SWK 495 over 2 semesters

**Contact Information:** Kelly Jaksa, Program Coordinator, Rm 107 Social Work Building, 581-2405

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 Science in Social Work qualifies graduates to sit for the Licensed Social Worker examination 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. Bachelor of Science in Social Work 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.

## Requirements:

The School of Social Work requires a 2.5 overall GPA.

## 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:

- SWK 380 - The Biological Person and the Environment Credits: 3  
or
- BIO 208 - Anatomy and Physiology Credits: 4
  
- ENG 212 - Persuasive and Analytical Writing Credits: 3  
or
- ENG 317 - Business and Technical Writing Credits: 3  
One of the following PHI courses in Ethics:
  
- PHI 100 - Contemporary Moral Problems Credits: 3
- PHI 230 - Ethics Credits: 3
- PHI 235 - Biomedical Ethics Credits: 3
- PHI 240 - Social and Political Philosophy Credits: 3
- PHI 344 - Theories of Justice Credits: 3
  
- POS 100 - American Government Credits: 3
- PSY 100 - General Psychology Credits: 3
  
- PSY 241 - Statistics in Psychology Credits: 4  
or
- STS 232 - Principles of Statistical Inference Credits: 3
  
- SOC 101 - Introduction to Sociology Credits: 3
- SWK 101 - Opportunities for the Social Work Major Credits: 1
  
- SWK 330 - Contemporary Issues in Diversity and Pluralism Credits: 3  
or
- SOC 201 - Social Inequality Credits: 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.S. in Social Work degree:

- SWK 320 - Introduction to Social Work Credits: 3
  - SWK 350 - Human Behavior and the Social Environment I Credits: 3
  - SWK 351 - Human Behavior in the Social Environment II Credits: 3
  - SWK 361 - Generalist Social Work Practice I Credits: 3
  - SWK 395 - Beginning Field Experience in Social Work Credits: 1 - 3  
(2 semesters)
  - SWK 440 - Social Welfare Policy and Issues Credits: 3
  - SWK 462 - Generalist Social Work Practice II Credits: 3
  - SWK 463 - Generalist Social Work Practice III Credits: 3
  - SWK 491 - Methods of Social Work Research Credits: 3
  - SWK 495 - Field Practicum in Social Work Credits: 1-6  
(2 semesters)
- 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.S. in Social Work 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

Because 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 - Generalist Social Work Practice 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 B.S. in Social Work 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.

## 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 School online catalog for more information).

## Required Courses in Suggested Sequence for the B.S. 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 Credits: 3
- POS 100 - American Government Credits: 3
- SOC 101 - Introduction to Sociology Credits: 3
- SWK 101 - Opportunities for the Social Work Major Credits: 1
- General Education: Artistic and Creative Expression Credits: 3
- Elective Credits: 3

### First Year-Second Semester

- PHI 100 - Contemporary Moral Problems Credits: 3  
or
- PHI 230 - Ethics Credits: 3  
or
- PHI 235 - Biomedical Ethics Credits: 3  
or
- PHI 240 - Social and Political Philosophy Credits: 3  
or
- PHI 344 - Theories of Justice Credits: 3
  
- PSY 100 - General Psychology Credits: 3
  
- SWK 330 - Contemporary Issues in Diversity and Pluralism Credits: 3  
or
- SOC 201 - Social Inequality Credits: 3
- General Education Population and Environment Credits: 3
- Elective Credits: 3

### Second Year-First Semester

- Lab Science Credits: 4
- SWK 320 - Introduction to Social Work Credits: 3

- Electives Credits: 6
- General Education: Mathematics Credits: 3

## Second Year-Second Semester

- Application Science - Credits: 3
- General Education - Mathematics - Credits: 3
- PSY 241 or MAT 232

## Third Year-First Semester

\* SWK 350, 395, and 491 must be taken during this semester.

- ENG 212 - Persuasive and Analytical Writing Credits: 3  
or
- ENG 317 - Business and Technical Writing Credits: 3

- SWK 350 - Human Behavior and the Social Environment I Credits: 3
- SWK 395 - Beginning Field Experience in Social Work Credits: 1 - 3
- SWK 491 - Methods of Social Work Research Credits: 3
- SWK 380 - The Biological Person and the Environment Credits: 3

Please Note: SWK 380 does not fulfill the General Education Science requirement but does fulfill the School of Social Work Anatomy and Physiology requirement.

## 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 Credits: 3
- SWK 361 - Generalist Social Work Practice I Credits: 3
- SWK 395 - Beginning Field Experience in Social Work Credits: 1 - 3
- SWK 440 - Social Welfare Policy and Issues Credits: 3
- Electives Credits: 3

## Fourth Year-First Semester

\* SWK 462, and 495 must be taken during this semester.

- SWK 462 - Generalist Social Work Practice II Credits: 3
- SWK 495 - Field Practicum in Social Work Credits: 1-6
- Electives Credits: 6

## Fourth Year-Second Semester

\* SWK 463, and 495 must be taken during this semester.

- SWK 463 - Generalist Social Work Practice III Credits: 3
- SWK 495 - Field Practicum in Social Work Credits: 1-6
- Elective Credits: 3

## Sustainable Agriculture

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** None.

**Other GPA requirements to graduate:** None.

**Required Course(s) for fulfilling Capstone Experience:** PSE 430

**Contact Information:** Jaina Young, Undergraduate Program Coordinator, 117 Deering Hall, (207) 581-2948, [jaina.young@umit.maine.edu](mailto:jaina.young@umit.maine.edu)

The Bachelor of Science in Sustainable Agriculture, which is offered through the School of Food and Agriculture, is an interdisciplinary program offered cooperatively by the faculties of the Schools of Food and Agriculture, Biology and Ecology and Economics. The program is designed for students interested in working in the growing field of ecologically-based agriculture in areas of production, research and consumer education. The BS degree in Sustainable Agriculture can also be used as preparation for postgraduate study in a variety of disciplines.

The Sustainable Agriculture program emphasizes: how to increase farm profits by decreasing the costs of crop and livestock production; 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 agrochemicals; 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. Our web site is: [www.sag.umaine.edu](http://www.sag.umaine.edu).

#### **Black Bear Food Guild:**

The Guild is a student-run organization that manages a three-acre certified organic vegetable operation within the University of Maine's Rogers' Experimental Farm, located approximately three miles from campus. The Guild markets their produce through a community share-holder plan, at the local Farmers Market, and through a farm stand at the field site. BBFG members make use of Sustainable Agriculture faculty and staff as resources for planning and managing the operation, but the emphasis is on student cooperative decision-making. Students often fulfill their degree requirement for the Field Experience through a summer with the BBFG.

## Required Courses in Suggested Sequence for the BS in Sustainable Agriculture

### First Year - First Semester

- AVS 145 - Animal Science Credits: 4
- or

- FSN 101 - Introduction to Food and Nutrition Credits: 3
- BIO 100 - Basic Biology Credits: 4
- NFA 117 - Issues and Opportunities Credits: 1
- PSE 100 - Plant Science Credits: 4
- PSE 105 - Principles of Sustainable Agriculture Credits: 3

## First Year - Second Semester

- ECO 254 - Small Business Economics and Management Credits: 3
- ENG 101 - College Composition Credits: 3
- MAT 122 - Pre-Calculus Credits: 4
- PSE 101 - Cropping Systems Credits: 4

## Second Year - First Semester

- BMB 207 - Fundamentals of Chemistry Credits: 3
- BMB 209 - Fundamentals of Chemistry Laboratory Credits: 1
- **or**
- CHY 121 - Introduction to Chemistry Credits: 3
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- CMJ 102 - Fundamentals of Interpersonal Communication Credits: 3
- **or**
- CMJ 103 - Fundamentals of Public Communication Credits: 3
- **or**
- SFR 222 - Environmental Communication Skills Credits: 3
- PSE 203 - Weed Biology and Identification Credits: 3 (even years)
- PSE 215 - Vegetable and Fruit Production Credits: 3
- WLE 200 - Ecology Credits: 3
- **or**
- BIO 319 - General Ecology Credits: 3 (Spring)

## Second Year - Second Semester

- BMB 208 - Elementary Physiological Chemistry Credits: 3
- BMB 210 - Elementary Physiological Chemistry Laboratory Credits: 1
- **or**
- CHY 122 - The Molecular Basis of Chemical Change Credits: 3
- CHY 124 - The Molecular Basis of Chemical Change Laboratory Credits: 1
- EES 140 - Soil Science Credits: 3
- EES 141 - Soil Science Laboratory Credits: 1
- STS 232 - Principles of Statistical Inference Credits: 3

- Elective Credits: 3

## Summer

- PSE 396 - Field Experience in Plant, Soil and Environmental Sciences Credits: 1 - 16

## Third Year - First Semester

- BIO 327 - Introductory Applied Entomology Credits: 4
- PHI 232 - Environmental Ethics Credits: 3
- **or**
- General Education: Ethics Credits: 3
- PSE 312 - Sustainable Food Systems: Challenges and Opportunities Credits: 3
- PSE 320 - Soil Organic Matter Management Credits: 3
- General Education: Western Cultural Tradition Credits: 3

## Third Year - Second Semester

- PSE 410 - Plant Propagation Credits: 4
- PSE 415 - Greenhouse Management Credits: 4
- PSE 440 - Environmental Soil Chemistry and Plant Nutrition Credits: 3
- Elective Credits: 3

## Fourth Year - First Semester

- PSE 403 - Weed Ecology and Management Credits: 3
- PSE 457 - Plant Pathology Credits: 4
- General Education: Cultural Diversity and International Perspectives Credits: 3
- General Education: Social Context and Institutions Credits: 3
- Elective Credits: 3

## Fourth Year - Second Semester

- PSE 430 - Environmental Horticulture Credits: 3
- PSE 479 - Crop Ecology and Physiology Credits: 3
- General Education: Artistic and Creative Expression Credits: 3
- Elective Credits: 5

## **Wildlife Ecology**

## **OVERVIEW OF DEGREE REQUIREMENTS**

**Minimum number of credits required to graduate:** 121

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** Grade of C or better in MAT 122 or C- in MAT 126, and Grade of C- in WLE 200 or SMS 300 or BIO 319 needed to progress to WLE 220.

**Other GPA requirements to graduate:** None.

**Required Course(s) for fulfilling Capstone Experience:** WLE 450 and WLE 455

**Contact Information:** Lindsay C. N. Seward, Undergraduate Coordinator, 238 Nutting Hall, (207) 581-2847, wildeco@maine.edu

The Department of Wildlife, Fisheries, and Conservation Biology offers an education with an emphasis on basic sciences and principles of wildlife ecology and resource management, with the goal for students to develop responsible citizenship and a sound training as a professional wildlife biologist, a professional fisheries biologist, or a conservation biologist. A minor in Fisheries is available to non-majors interested in a fisheries career. Students are exposed to wildlife issues in a diversity of ecological systems, in national parks, wildlife refuges, state management areas, and on private land. Maine offers diverse opportunities to study wildlife in a variety of natural environments ranging from the coast with its sea birds, marine mammals and eagles, to the more mountainous northern boreal forest occupied by moose, black bears, loons, red-backed salamanders, brook trout, and salmon. Maine also has thousands of lakes and ponds and 30,000 miles of rivers and streams.

An active Wildlife Ecology graduate program, offering both M. S. and Ph.D. degrees, enables undergraduates to interact with graduate students conducting research in wildlife and fish ecology and conservation. Students have the opportunity to work with federal wildlife and fisheries biologists who are faculty in the Department and are employed through the USGS Maine Cooperative Fish and Wildlife Research Unit.

The curriculum in Wildlife Ecology is designed to train the student to adapt to the changing requirements of the Wildlife profession. The curriculum has solid science and conservation foundations, coupled with experiences in wildlife policy, human dimensions of wildlife conservation, communications, and the humanities. Students can also meet the requirements to become a Certified Wildlife Biologist or a Certified Fisheries Biologist through the professional societies associated with our discipline. The curriculum for the B.S. degree in Wildlife Ecology plus a concentration in Fisheries allow students to meet certification requirements of the American Fisheries Society. The Wildlife Ecology curriculum plus a concentration in Wildlife Science and Management qualify students to meet professional certification requirements of The Wildlife Society.

### **Requirements for BS in Wildlife Ecology**

Graduates must complete 121 credits including:

1. Satisfy general education requirements.
2. Complete all courses listed in the curriculum for the B.S. in Wildlife Ecology.
3. One additional field course.
4. Complete a Concentration

### **Also Recommended**

Field Experience in the profession, either through a paid or volunteer position or internship.

## **Concentrations in Wildlife Ecology**

Students are encouraged to focus 12-17 Elective Credits in an area of concentration which is listed on the transcript at graduation. Available Concentrations are:



- Conservation Biology
- Fisheries
- Wildlife Science and Management

## Required Courses in Suggested Sequence for the BS in Wildlife Ecology

### First Year - First Semester

- BIO 100 - Basic Biology Credits: 4
- ENG 101 - College Composition Credits: 3
- MAT 122 - Pre-Calculus Credits: 4  
or
- MAT 126 - Calculus I Credits: 4
- WLE 100 - Introduction to Wildlife Resources Credits: 1
- General Education Elective Credits: 3

### First Year - Second Semester

- BIO 200 - Biology of Organisms Credits: 4
- CMJ 103 - Fundamentals of Public Communication Credits: 3  
or
- SFR 222 - Environmental Communication Skills Credits: 3 (fall course)
- ECO 100 - Intro to Economics Credits: 3  
or
- ECO 120 - Principles of Microeconomics Credits: 3
- WLE 150 - Wildlife Field Trip Credits: 1
- General Education Elective Credits: 3

### Second Year - First Semester

- BIO 329 - Vertebrate Biology Credits: 3
- BIO 331 - Vertebrate Biology Laboratory Credits: 1
- BMB 207 - Fundamentals of Chemistry Credits: 3
- BMB 209 - Fundamentals of Chemistry Laboratory Credits: 1
- WLE 200 - Ecology Credits: 3
- WLE 201 - Ecology Laboratory Credits: 3

### Second Year - Second Semester

- BMB 208 - Elementary Physiological Chemistry Credits: 3

- BMB 210 - Elementary Physiological Chemistry Laboratory Credits: 1
- EES 140 - Soil Science Credits: 3
- WLE 220 - Introduction to Ecological Statistics Credits: 4
- General Education Elective Credits: 3

## May Term

- WLE 250 - Wildlife Field Survey Credits: 3

## Third Year - First Semester

- BIO 326 - General Entomology Credits: 4  
or
- BIO 353 - Invertebrate Zoology Credits: 4
- BIO 464 - Taxonomy of Vascular Plants Credits: 4
- WLE 410 - Wildlife Population Dynamics and Conservation Credits: 3
- WLE 411 - Wildlife Population Dynamics Lab Credits: 1
- Aquatic Ecology Elective Credits: 3

## Third Year - Second Semester

- BIO 350 - Concepts and Applications of Genetics Credits: 3  
or
- BIO 465 - Evolution Credits: 3
- SFR 400 - Applied Geographic Information Systems Credits: 4
- WLE 470 - Wildlife Policy and Administration Credits: 3
- Second Field Course Credits: 1-3
- Elective Credits: 3

## Fourth Year - First Semester

- ECO 377 - Introduction to Natural Resource Economics and Policy Credits: 3
- SFR 349 - Applied Forest Ecology and Silviculture Credits: 4  
or
- WLE 423 - Wetland Ecology and Conservation Credits: 4
- WLE 461 - Human Dimensions of Fisheries and Wildlife Conservation Credits: 3
- Elective Credits: 6

## Fourth Year - Second Semester

- WLE 450 - Wildlife-Habitat Relationships Credits: 3
- WLE 455 - Wildlife-Habitat Evaluation Credits: 2

Elective (General Education or Concentration) Credits: 10-11

## Notes:

The core curriculum satisfies the General Education Social Context and Institutions and Population and the Environment requirements, however electives must be chosen to meet Concentration Requirements and the remaining General Education Requirements (Western Cultural Tradition, Cultural Diversity and International Perspectives, Artistic and Creative Expression, and Ethics).

# Zoology

## OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to graduate:** 120

**Minimum Cumulative GPA required to graduate:** 2.0

**Minimum Grade requirements for courses to count toward major:** Zoology Majors must have a "C" or better in BIO 100 and BIO 200.

**Other GPA requirements to graduate:** Zoology Majors require a cumulative 2.0 GPA in all courses in Biological Sciences Areas I-V, affiliated science, and math courses combined.

**Required Course(s) for fulfilling Capstone Experience:** BIO 388 or BIO 392 or BIO 402 or BIO 438 or BIO 447 or BIO 450 or BIO 463 or HON 499\*. See concentration curriculums for specific requirements. \*The thesis topic must be in Zoology and the thesis advisor should be in the School of Biology and Ecology.

**Contact Information:** Ann Dieffenbacher-Krall, Assistant Director of the School of Biology and Ecology, 100 Murray Hall, (207) 581-2510, annd@maine.edu

## Bachelor of Science or Bachelor of Arts

The School of Biology and Ecology offers both B.S. and B.A. degrees in Zoology. Both degrees provide a strong background in biological sciences. They have the same requirements in biological sciences and differ only in the level of chemistry, mathematics, and physics required. The B.S. requires more in depth study of chemistry, math, and physics while the B.A. requires more social sciences and humanities. The B.S. provides preparation for the health professions and graduate study while the B.A. ensures a broad liberal arts education and allows more flexibility for minors and double majors.

Zoology B.S.

Zoology B.A.

## Zoology B.S.

The B.S. degree in Zoology offered by the School of Biology and Ecology. For information about areas of research and for an overview of our facilities, cooperative programs, and list of faculty in the School of Biology and Ecology, see our web site [www.sbe.umaine.edu/](http://www.sbe.umaine.edu/)

Students choosing Zoology as a second major must complete the second major by selecting courses in Areas I-V that are not being used to satisfy the requirements of their first major.

Students majoring in Zoology are not eligible for a minor or second major in Biology or Botany because of extensive overlap in the requirements for these degrees.

Students majoring in Zoology must complete an assessment exit exam in their last semester prior to graduating.

Students majoring in Zoology must earn a score of 4 or 5 in order to receive advanced placement credit for BIO 100.

Students must complete a minimum of 12 credits originating from the University of Maine in Biological Sciences Areas I-V.

*Students wishing to transfer from other institutions or from another program within the University of Maine must have completed BIO 100: Basic Biology with a grade of C or better or have a cumulative GPA of 2.0 or better.*

The study of zoology increases our knowledge of human biology and of the biology of the many species of animals that we interact with. 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, environmental monitoring and regulation at state and federal levels, and private design and consulting.

Zoology offers students many choices and allows them to tailor their programs to their interests. Students can choose from a wide range of courses covering all major areas of zoology including cells and molecules, genetics and development, physiology, anatomy, evolution and biodiversity, and ecology and behavior. Each student works with an academic adviser in the faculty to develop a curriculum that best meets the student's goals and allows for exploration or specialization as desired. 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 include independent research under the guidance of a faculty member in their programs.

### **Biology Club**

Students majoring in Biology, Botany, Zoology, and Medical Laboratory Sciences (Medical Technology) 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.

### **Concentrations in the B.S. Degree in Zoology**

Optional concentrations are available in:

- Pre-medical Studies
- Ecology

These concentrations are described in detail following the suggested sequence of courses for the B.S. in Zoology.

### **Accelerated Binary Degree Programs, including the BS Degree in Zoology**

The University of Maine and the University of New England College of Osteopathic Medicine (UNECOM), New England College of Optometry (NECO) and Logan College of Chiropractic (LCC) cooperate in providing accelerated undergraduate curricula leading to consideration for early admission to the cooperating colleges. Students complete three years at the University of Maine and are awarded the BS in Zoology upon the successful completion of the first year curriculum at UNECOM, NECO, or LCC. Contact the Office of Health Professions (207) 581-2587 for complete program details and a curriculum for the first three years.

### **Combined B.S. and M.S. degrees in Botany, Entomology, or Zoology**

These Four Plus programs allow highly dedicated students to earn both the B.S. and M.S. degrees in five to six years. This allows the student to save time and reduces the cost of the M.S. degree. See our web site [www.sbe.umaine.edu/](http://www.sbe.umaine.edu/) for details.

## Basic Biological Sciences for the B.S. in Zoology

Note: BIO 208, Anatomy and Physiology, BIO 222 Biology: The Living Science and BIO 223 Biology: the Living Science Laboratory will not count towards the major for students majoring in Zoology.

- BIO 100 - Basic Biology Credits: 4
- BIO 200 - Biology of Organisms Credits: 4

## Biological Sciences Areas I-V

The following are minimum requirements for these 5 areas: 24 credits, 3 credits/area, 4 laboratory (L) courses, and at least 3 animal (A) courses from areas III - V.

If BIO 438, BIO 447, BIO 450, or BIO 463 is taken as a capstone, it can satisfy the area in which it is listed and can count as a laboratory course (if labeled L) but cannot count towards the 24 credits required in Areas I-V.

### I. Cell and Molecular Biology

If only one course is selected from this area, it must be BMB 280 or BIO 480

- BIO 336 - Developmental Biology Credits: 4
  - BIO 438 - Morphogenesis in Development and Disease Credits: 3
  - BIO 441 - Microscopy Credits: 2
  - BIO 450 - Histology Credits: 4
  - BIO 474 - Neurobiology Credits: 3
  - BIO 480 - Cell Biology Credits: 3
  - BIO 483 - Cell Biology Laboratory Credits: 1
  - BMB 280 - Introduction to Molecular and Cellular Biology Credits: 3
  - BMB 300 - General Microbiology Credits: 3
  - BMB 305 - General Microbiology Laboratory Credits: 2
  - BMB 420 - Infectious Disease Credits: 3
  - BMB 421 - Infectious Disease Laboratory Credits: 2
- L-BIO 336, BIO 450, BIO 483, BMB 305, BMB 421

### II. Genetics

- BIO 350 - Concepts and Applications of Genetics Credits: 3
  - BIO 462 - Principles of Genetics Credits: 3
  - BMB 400 - Molecular Genetics Credits: 3
  - BMB 490 - Microbial Genetics Credits: 5
- L-BMB 490

### III. Physiology

- BIO 307 - Introduction to Neuroscience Credits: 3
  - BIO 377 - Medical Physiology Credits: 3
  - BIO 378 - Medical Physiology Laboratory Credits: 2
  - BIO 452 - Plant Physiology Credits: 3
  - BIO 479 - Endocrinology Credits: 3
  - BIO 480 - Cell Biology Credits: 3
  - BIO 483 - Cell Biology Laboratory Credits: 1
  - BMB 430 - Bacterial Physiology Credits: 3
  - BMB 431 - Bacterial Physiology Laboratory Credits: 1
  - BMB 440 - Introductory Immunology Credits: 3
  - BMB 441 - Introductory Immunology Laboratory Credits: 1
  - SMS 485 - Comparative Animal Physiology Credits: 3
- L-BIO 378, BIO 483, BIO 431, BMB 441  
A-BIO 307, BIO 377, BIO 479, BMB 440, SMS 485  
P-BIO 452

#### IV. Biodiversity and Evolution

- BIO 310 - Plant Biology Credits: 4
  - BIO 326 - General Entomology Credits: 4
  - BIO 329 - Vertebrate Biology Credits: 3
  - BIO 331 - Vertebrate Biology Laboratory Credits: 1
  - BIO 335 - Human Anatomy Credits: 4
  - BIO 342 - Plants in Our World Credits: 3
  - BIO 353 - Invertebrate Zoology Credits: 4
  - BIO 430 - Ecology and Systematics of Aquatic Insects Credits: 4
  - BIO 432 - Biology of the Fungi Credits: 4
  - BIO 433 - Mammalogy Credits: 4
  - BIO 464 - Taxonomy of Vascular Plants Credits: 4
  - BIO 465 - Evolution Credits: 3
  - SFR 439 - Plant Anatomy Structure and Function Credits: 3
  - SMS 373 - Marine and Freshwater Algae Credits: 4
- L-BIO 310, BIO 326, BIO 331, BIO 335, BIO 353, BIO 430, BIO 432, BIO 433, BIO 464, SFR 439, SMS 373  
A-BIO, 326, BIO 329, BIO 335, BIO 353, BIO 430, BIO 433  
P-BIO 310, BIO 342, BIO 432, BIO 464, SFR 439, SMS 373

#### 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 Credits: 4
- BIO 319 - General Ecology Credits: 3

- BIO 327 - Introductory Applied Entomology Credits: 4
  - BIO 354 - Animal Behavior Credits: 3
  - BIO 355 - Animal Behavior Laboratory Credits: 2
  - BIO 434 - Avian Biology and Ecology Credits: 3
  - BIO 437 - Avian Biology and Ecology Laboratory Credits: 1
  - BIO 447 - Experimental Ecology Credits: 4
  - BIO 455 - Biological Invasions Credits: 4
  - BIO 463 - River Ecology Credits: 4
  - BIO 468 - Lake Ecology Credits: 3
  - BIO 476 - Paleoecology Credits: 4
  - EES 140 - Soil Science Credits: 3
  - EES 141 - Soil Science Laboratory Credits: 1
  - EES 475 - Field Studies in Ecology Credits: 1-3
  - INT 482 - (SBE, PSE) Pesticides and the Environment Credits: 3
  - PSE 320 - Soil Organic Matter Management Credits: 3
  - PSE 457 - Plant Pathology Credits: 4
  - SMS 300 - Marine Ecology Credits: 3
  - WLE 200 - Ecology Credits: 3
  - WLE 201 - Ecology Laboratory Credits: 3
  - WLE 423 - Wetland Ecology and Conservation Credits: 4
- L-BIO 205, BIO 327, BIO 355, BIO 437, BIO 447, BIO 463, BIO 476, EES 141, EES 475, PSE 457, WLE 201, WLE 280, WLE 423  
 A-BIO 327, BIO 354, BIO 434  
 P-PSE 457

## Affiliated Sciences and Math for the B.S. in Zoology

To complete your B.S. in Zoology you must take courses in Chemistry, Mathematics, and Physics. Below we have outlined your options for completing each requirement.

### Required Courses

- CHY 121 - Introduction to Chemistry Credits: 3
- CHY 122 - The Molecular Basis of Chemical Change Credits: 3
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- CHY 124 - The Molecular Basis of Chemical Change Laboratory Credits: 1

### Organic Chemistry Option 1

- BMB 221 - Organic Chemistry Credits: 3
- BMB 222 - Laboratory in Organic Chemistry Credits: 1
- BMB 322 - Biochemistry Credits: 3
- BMB 323 - Biochemistry Laboratory Credits: 2

-Total Organic Chemistry Credits: 9

## Organic Chemistry Option 2

- CHY 251 - Organic Chemistry I Credits: 3
- CHY 253 - Organic Chemistry Laboratory I Credits: 2
- BMB 322 - Biochemistry Credits: 3
- BMB 323 - Biochemistry Laboratory Credits: 2

-Total Organic Chemistry Credits: 10

## Organic Chemistry Option 3

- CHY 251 - Organic Chemistry I Credits: 3
- CHY 253 - Organic Chemistry Laboratory I Credits: 2
- CHY 252 - Organic Chemistry II Credits: 3
- CHY 254 - Organic Chemistry Laboratory II Credits: 2

-Total Organic Chemistry Credits: 10

## Mathematics

- MAT 126 - Calculus I Credits: 4
- STS 232 - Principles of Statistical Inference Credits: 3

-Total Mathematics Credits: 7

## Physics Option 1

- PHY 111 - General Physics I Credits: 4
- PHY 112 - General Physics II Credits: 4

-Total Physics Credits: 8

## Physics Option 2

- PHY 121 - Physics for Engineers and Physical Scientists I Credits: 4
- PHY 122 - Physics for Engineers and Physical Scientists II Credits: 4

-Total Physics Credits: 8

## Courses in Suggested Sequence for the B.S. in Zoology



## First Year -First Semester

- BIO 100 - Basic Biology Credits: 4
- CHY 121 - Introduction to Chemistry Credits: 3  
(Enrollment in CHY 121 requires readiness for MAT 122 or equivalent. Students who are not ready to take MAT 122 or its equivalent take CHY 121 in the second year.)
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- ENG 101 - College Composition Credits: 3  
or
- General Education Requirement<sup>1</sup> Credits: 3
- MAT 122 - Pre-Calculus Credits: 4  
or
- MAT 126 - Calculus I Credits: 4
- NFA 117 - Issues and Opportunities Credits: 1

## First Year - Second Semester

- BIO 200 - Biology of Organisms Credits: 4
- CHY 122 - The Molecular Basis of Chemical Change Credits: 3
- CHY 124 - The Molecular Basis of Chemical Change Laboratory Credits: 1
- ENG 101 - College Composition Credits: 3  
(If not taken in the first semester)
- General Education Requirement<sup>1</sup> Credits: 3-6  
or
- MAT 126 - Calculus I Credits: 4  
(If not taken in the first semester)

## Second Year - First Semester

- CHY 251 - Organic Chemistry I Credits: 3  
(See Footnote 3)
- CHY 253 - Organic Chemistry Laboratory I Credits: 2  
(See Footnote 3)
- STS 232 - Principles of Statistical Inference Credits: 3
- General Education Requirement or Elective Credits: 3
- Biological Sciences Area Choice<sup>2</sup> Credits: 3-4

## Second Year - Second Semester

- CHY 252 - Organic Chemistry II Credits: 3  
(see Footnote 3)
- CHY 254 - Organic Chemistry Laboratory II Credits: 2
- Biological Sciences Area Choice<sup>2</sup> Credits: 3-5
- General Education Requirement or Elective Credits: 6  
(see Footnote 3)

### Third Year - First Semester

- PHY 111 - General Physics I Credits: 4  
(See Footnote 4)
- General Education Requirement or Elective Credits: 6
- Biological Sciences Area Choice<sup>2</sup> Credits: 5-7

### Third Year - Second Semester

- PHY 112 - General Physics II Credits: 4  
(See Footnote 4)
- General Education Requirement or Elective Credits: 6-9
- Biological Sciences Area Choice<sup>2</sup> Credits: 3-4

### Fourth Year - First Semester

- Biological Sciences Area Choice<sup>2</sup> Credits: 4
- Capstone<sup>5</sup> or Elective Credits: 3
- General Education Requirements or Electives Credits: 6-9

### Fourth Year - Second Semester

- Biological Sciences Area Choice<sup>2</sup> Credits 4-9
- Elective or Capstone<sup>5</sup> Credits: 3
- General Education Requirements or Electives Credits: 6-9

### Footnotes

<sup>1</sup>See the General Education requirements for all students at the University. If BIO 400 (Biological Sciences Writing Intensive) is used to satisfy the General Education 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

<sup>2</sup>See above lists of courses in the 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

<sup>3</sup>Alternatively, students may take BMB 221/222 and BMB 322/323 or CHY 251/253 and BMB 322/323

<sup>4</sup>Alternatively, students may take PHY 121/122

<sup>5</sup>The General Education capstone experience requirement may be completed with BIO 388, 392, 402, 438, 447, 450, 463, or HON 499

## Concentration in Ecology

This concentration is intended for students interested in exposure to ecological principles within the context of a rigorous biological sciences curriculum. Students in this concentration must meet all of the requirements for the Zoology B.S. degree. The concentration also includes WLE 220 Introduction to Statistical Ecology and a requirement for a course on environmental influences. A total of 29-35 credits are required to complete the concentration depending on the selections made for each of the requirements.

Specific requirements:

### 1. Affiliated Sciences and Math

- WLE 220 - Introduction to Ecological Statistics Credits: 4  
This course can substitute for STS 232- Principles of Statistical Inference.

### 2. Area I. Cell and Molecular Biology

Free choice among Area I courses in the Zoology curriculum Credits: 3-4

### 3. Area II. Genetics

Free choice among Area II courses in the Zoology curriculum Credits: 3-5

### 4. Area III. Physiology

Free choice among Area III courses in the Zoology curriculum Credits: 3

### 5. Area IV. Biodiversity

- BIO 465 - Evolution Credits: 3
- In Addition, 3 credits chosen from Area IV courses in the Zoology curriculum. Credits: 6-7

### 6. Area V. Ecology and Behavior

- BIO 319 - General Ecology Credits: 3  
Or

- WLE 200 - Ecology Credits: 3
  - Or
  - SMS 300 - Marine Ecology Credits: 3
- Choose one course from above.  
In addition: Choose 3 credits from the following courses:  
6-7 credits total.
- BIO 205 - Field Natural History of Maine Credits: 4
  - BIO 327 - Introductory Applied Entomology Credits: 4
  - BIO 354 - Animal Behavior Credits: 3
  - BIO 355 - Animal Behavior Laboratory Credits: 2
  - BIO 434 - Avian Biology and Ecology Credits: 3
  - BIO 437 - Avian Biology and Ecology Laboratory Credits: 1
  - BIO 447 - Experimental Ecology Credits: 4
  - BIO 455 - Biological Invasions Credits: 4
  - BIO 463 - River Ecology Credits: 4
  - BIO 468 - Lake Ecology Credits: 3
  - BIO 476 - Paleocology Credits: 4
  - EES 475 - Field Studies in Ecology Credits: 1-3
  - PSE 457 - Plant Pathology Credits: 4
  - PSE 469 - Soil Microbiology Credits: 3
  - SFR 457 - Tree Pests and Disease Credits: 3
  - WLE 201 - Ecology Laboratory Credits: 3
  - WLE 423 - Wetland Ecology and Conservation Credits: 4

## 7. Primary and Secondary Producers

Choose at least one course labeled A and one labeled P from Areas I-V in the Zoology curriculum. These courses can also satisfy requirements in Areas I-V for the basic Zoology major and so do not add to the number of credits needed beyond the basic Zoology major.

## 8. Area VI. Environmental Influences

Three credits are required. Choose from these courses:

- EES 140 - Soil Science Credits: 3
- EES 141 - Soil Science Laboratory Credits: 1
- PSE 320 - Soil Organic Matter Management Credits: 3
- ERS 101 - Introduction to Geology Credits: 4
- ERS 102 - Environmental Geology of Maine Credits: 4
- ERS 108 - Beaches and Coasts Credits: 3
- INT 482 - (SBE, PSE) Pesticides and the Environment Credits: 3
- SFR 406 - Remote Sensing Image Interpretation and Forest Mapping Credits: 3

## 9. Field Experience

Choose at least one course from this list. This course can also satisfy one of the areas above.

- BIO 205 - Field Natural History of Maine Credits: 4
- BIO 355 - Animal Behavior Laboratory Credits: 2
- BIO 430 - Ecology and Systematics of Aquatic Insects Credits: 4
- BIO 437 - Avian Biology and Ecology Laboratory Credits: 1
- BIO 463 - River Ecology Credits: 4
- EES 475 - Field Studies in Ecology Credits: 1-3
- WLE 423 - Wetland Ecology and Conservation Credits: 4

## 10. Capstone

Choose one of these courses\*:

- BIO 388 - Research Capstone in Biology Credits: 1-3
- BIO 392 - Independent Study Capstone in Biology Credits: 1-3
- BIO 447 - Experimental Ecology Credits: 4
- BIO 463 - River Ecology Credits: 4
- HON 499 - Honors Thesis Credits: 3  
(Must be a topic in Biology and the thesis advisor should be in SBE)

## 11. Writing requirement (students in the Honors program are exempt)

One course required. Choose from the following courses\*:

- ENG 212 - Persuasive and Analytical Writing Credits: 3
- ENG 317 - Business and Technical Writing Credits: 3

\*These courses satisfy the general education writing intensive requirement and so do not add to the number credits needed beyond the basic Zoology major

## Concentration in Pre-medical Studies

This concentration is intended for students preparing for a career in medicine or one of the other health professions (dentistry, optometry, osteopathy, physician assistant, pharmacy, podiatry, veterinary medicine and other health-related fields). Students completing this concentration will be fully prepared for advanced studies in these fields. In addition to the required science and mathematics courses, the concentration also includes general education courses that are desired by many medical schools. The concentration allows for considerable choice in courses and provides valuable guidance to students and their advisors with regard to course selection in their major and in general education requirements.

### **Requirements for the concentration**

Students in the pre-medical studies concentration must meet all of the requirements for the ZOL-BS.

Specific requirements:

### Affiliated Sciences and Math

- Choose CHY 251-254 to meet the organic chemistry requirement

## Area I. Cell and Molecular Biology

Choose at least one of the following courses:

If only one course is chosen, it must be BMB 280 or BIO 480.

- BIO 336 - Developmental Biology Credits: 4
- BIO 480 - Cell Biology Credits: 3
- BIO 483 - Cell Biology Laboratory Credits: 1
- BMB 280 - Introduction to Molecular and Cellular Biology Credits: 3
- BMB 300 - General Microbiology Credits: 3
- BMB 305 - General Microbiology Laboratory Credits: 2

## Area II. Genetics

- BIO 462 - Principles of Genetics Credits: 3

## Area III. Physiology

Choose at least one of these courses:

- BIO 377 - Medical Physiology Credits: 3
- BIO 378 - Medical Physiology Laboratory Credits: 2
- BIO 480 - Cell Biology Credits: 3
- BIO 483 - Cell Biology Laboratory Credits: 1
- BMB 440 - Introductory Immunology Credits: 3
- BMB 441 - Introductory Immunology Laboratory Credits: 1

## Area IV. Biodiversity

Choose at least one of these courses:

- BIO 465 - Evolution Credits: 3  
BIO 465 is required plus 3 additional credits chosen from the courses in the Zoology curriculum Credits: 6-7

## Area V. Ecology and Behavior

- Free choice among the Area V courses in the ZOL-BS curriculum.

## Capstone

Choose one of these courses:

- BIO 388 - Research Capstone in Biology Credits: 1-3

- BIO 438 - Morphogenesis in Development and Disease Credits: 3
- BIO 450 - Histology Credits: 4
- HON 499 - Honors Thesis Credits: 3

## Other required courses

- BMB 322 - Biochemistry Credits: 3  
and
- BMB 323 - Biochemistry Laboratory Credits: 2  
(See Footnote 1)
- PSY 100 - General Psychology Credits: 3  
(See Footnote 2)
- SOC 101 - Introduction to Sociology Credits: 3  
(See Footnote 2)
- ENG 212 - Persuasive and Analytical Writing Credits: 3  
(See Footnote 3)
- Literature course: An English literature course at the 200 level or above  
(See Footnote 4)
- PHI 235 - Biomedical Ethics Credits: 3  
(See Footnote 5)

Footnotes:

<sup>1</sup>Required by medical schools. If CHY 251-254 have been completed, BMB 323 can count as one of the four labs required in Areas I-V.

<sup>2</sup>Satisfies general education Social Contexts and Institutions.

<sup>3</sup>Satisfies general education Writing Intensive not required for students completing HON 211 and HON 212.

<sup>4</sup>Satisfies a general education area depending on the course chosen. Not required for students completing HON 211 and 212.

<sup>5</sup>Satisfies general education requirements for Ethics, Western Cultural Tradition, and Social Contexts and Institutions.

## Recommended courses

- INT 200 - (SBE) Orientation to Health Professions Credits: 4
- BIO 208 - Anatomy and Physiology Credits: 4

## Notes

a. Inclusion of BIO 480, Cell Biology, is highly recommended. This course can only count in one area.

b. Physician assistant and pharmacy schools require two semesters of anatomy and physiology. This requirement can be met by combining BIO 208, Anatomy and Physiology, and BIO 377, 378 Medical physiology and lab OR by combining BIO 335, Human Anatomy, and BIO 377, 378 Medical physiology and lab. Check with the Health Professions Specialist for details of the program you want to pursue.

c. Students pursuing this concentration may want to consider a minor in Neuroscience, Chemistry, Psychology, or Business.

**Return to top of Page**

## Zoology B.A.

The B.A. degree in Zoology offered by the School of Biology and Ecology. For information about areas of research and for an overview of our facilities, cooperative programs, and list of faculty in the School of Biology and Ecology, see our web site [www.sbe.umaine.edu/](http://www.sbe.umaine.edu/)

Students choosing Zoology as a second major must complete the second major by selecting courses in Areas I-V that are not being used to satisfy the requirements of their first major.

Students majoring in Zoology are not eligible for a minor or second major in Biology or Botany because of extensive overlap in the requirements for these degrees.

Students majoring in Zoology must complete an assessment exit exam in their last semester prior to graduating.

Students majoring in Zoology must earn a score of 4 or 5 in order to receive advanced placement credit for BIO 100.

Students must complete a minimum of 12 credits originating from the University of Maine in Biological Sciences Areas I-V.

*Students wishing to transfer from other institutions or from another program within the University of Maine must have completed BIO 100: Basic Biology with a grade of C or better or have a cumulative GPA of 2.0 or better.*

The study of zoology increases our knowledge of human biology and of the biology of the many species of animals that we interact with. 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, environmental monitoring and regulation at state and federal levels, and private design and consulting.

Zoology offers students many choices and allows them to tailor their programs to their interests. Students can choose from a wide range of courses covering all major areas of zoology including cells and molecules, genetics and development, physiology, anatomy, evolution and biodiversity, and ecology and behavior. Each student works with an academic adviser in the faculty to develop a curriculum that best meets the student's goals and allows for exploration or specialization as desired. 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 include independent research under the guidance of a faculty member in their programs.

### **Biology Club**

Students majoring in Biology, Botany, Zoology, and Medical Laboratory Sciences (Medical Technology) 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.

### **Optional Concentration in the B.A. degree in Zoology**

Students may complete the basic B.A. in Zoology or they may add the optional Ecology Concentration. This concentration is described in detail following the suggested sequence of courses for the B.A. in Zoology.

## Basic Biological Sciences for the B.A. in Zoology



Note: BIO 208, Anatomy and Physiology, BIO 222 Biology: The Living Science and BIO 223 Biology: the Living Science Laboratory will not count towards the major for students majoring in Zoology.

- BIO 100 - Basic Biology Credits: 4
- BIO 200 - Biology of Organisms Credits: 4

## Biological Sciences Areas I-V

The following are minimum requirements for these 5 areas: 24 credits, 3 credits/area, 4 laboratory (L) courses, and at least 3 animal (A) courses from areas III - V.

If BIO 438, BIO 447, BIO 450, or BIO 463 is taken as a capstone, it can satisfy the area in which it is listed and can count as a laboratory course (if labeled L) but cannot count towards the 24 credits required in Areas I-V.

### I. Cell and Molecular Biology

If only one course is selected from this area, it must be BMB 280 or BIO 480

- BIO 336 - Developmental Biology Credits: 4
- BIO 438 - Morphogenesis in Development and Disease Credits: 3
- BIO 441 - Microscopy Credits: 2
- BIO 450 - Histology Credits: 4
- BIO 474 - Neurobiology Credits: 3
- BIO 480 - Cell Biology Credits: 3
- BIO 483 - Cell Biology Laboratory Credits: 1
- BMB 280 - Introduction to Molecular and Cellular Biology Credits: 3
- BMB 300 - General Microbiology Credits: 3
- BMB 305 - General Microbiology Laboratory Credits: 2
- BMB 420 - Infectious Disease Credits: 3
- BMB 421 - Infectious Disease Laboratory Credits: 2
- L - BIO 336, BIO 450, BIO 483, BMB 305, BMB 421

### II. Genetics

- BIO 350 - Concepts and Applications of Genetics Credits: 3
- BIO 462 - Principles of Genetics Credits: 3
- BMB 400 - Molecular Genetics Credits: 3
- BMB 490 - Microbial Genetics Credits: 5
- L - BMB 490

### III. Physiology

- BIO 307 - Introduction to Neuroscience Credits: 3

- BIO 377 - Medical Physiology Credits: 3
- BIO 378 - Medical Physiology Laboratory Credits: 2
- BIO 452 - Plant Physiology Credits: 3
- BIO 479 - Endocrinology Credits: 3
- BIO 480 - Cell Biology Credits: 3
- BIO 483 - Cell Biology Laboratory Credits: 1
- BMB 430 - Bacterial Physiology Credits: 3
- BMB 431 - Bacterial Physiology Laboratory Credits: 1
- BMB 440 - Introductory Immunology Credits: 3
- BMB 441 - Introductory Immunology Laboratory Credits: 1
- SMS 485 - Comparative Animal Physiology Credits: 3
- L - BIO 378, BIO 483, BMB 431, BMB 441
- A - BIO 307, BIO 377, BIO 479, BMB 440, SMS 485
- P - BIO 452

#### IV. Biodiversity and Evolution

- BIO 310 - Plant Biology Credits: 4
- BIO 326 - General Entomology Credits: 4
- BIO 329 - Vertebrate Biology Credits: 3
- BIO 331 - Vertebrate Biology Laboratory Credits: 1
- BIO 335 - Human Anatomy Credits: 4
- BIO 342 - Plants in Our World Credits: 3
- BIO 353 - Invertebrate Zoology Credits: 4
- BIO 430 - Ecology and Systematics of Aquatic Insects Credits: 4
- BIO 432 - Biology of the Fungi Credits: 4
- BIO 433 - Mammalogy Credits: 4
- BIO 464 - Taxonomy of Vascular Plants Credits: 4
- BIO 465 - Evolution Credits: 3
- SFR 439 - Plant Anatomy Structure and Function Credits: 3
- SMS 373 - Marine and Freshwater Algae Credits: 4
- L - BIO 310, BIO 326, BIO 331, BIO 335, BIO 353, BIO 430, BIO 432, BIO 433, BIO 464, SFR 439, SMS 373
- A - BIO 326, BIO 329, BIO 335, BIO 353, BIO 430, BIO 433
- P - BIO 310, BIO 342, BIO 432, BIO 464, SFR 439, SMS 373

#### 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 Credits: 4
- BIO 319 - General Ecology Credits: 3
- BIO 327 - Introductory Applied Entomology Credits: 4
- BIO 354 - Animal Behavior Credits: 3

- BIO 355 - Animal Behavior Laboratory Credits: 2
- BIO 434 - Avian Biology and Ecology Credits: 3
- BIO 437 - Avian Biology and Ecology Laboratory Credits: 1
- BIO 447 - Experimental Ecology Credits: 4
- BIO 455 - Biological Invasions Credits: 4
- BIO 463 - River Ecology Credits: 4
- BIO 468 - Lake Ecology Credits: 3
- BIO 476 - Paleoecology Credits: 4
- EES 140 - Soil Science Credits: 3
- EES 141 - Soil Science Laboratory Credits: 1
- EES 475 - Field Studies in Ecology Credits: 1-3
- INT 482 - (SBE, PSE) Pesticides and the Environment Credits: 3
- PSE 320 - Soil Organic Matter Management Credits: 3
- PSE 457 - Plant Pathology Credits: 4
- SMS 300 - Marine Ecology Credits: 3
- WLE 200 - Ecology Credits: 3
- WLE 201 - Ecology Laboratory Credits: 3
- WLE 423 - Wetland Ecology and Conservation Credits: 4
- L - BIO 205, BIO 327, BIO 355, BIO 437, BIO 447, BIO 463, BIO 476, EES 141, EES 475, PSE 457, WLE 201, WLE 280, WLE 423
- A - BIO 327, BIO 354, BIO 434
- P - PSE 457

## Affiliated Sciences and Math for the B.A. in Zoology

To complete your B.A. in Zoology you must take courses in Chemistry, Mathematics, and Physics. Below we have outlined your options for completing each requirement.

### Required Courses

- CHY 121 - Introduction to Chemistry Credits: 3
- CHY 122 - The Molecular Basis of Chemical Change Credits: 3
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- CHY 124 - The Molecular Basis of Chemical Change Laboratory Credits: 1

### Organic Chemistry Option 1

- BMB 221 - Organic Chemistry Credits: 3
- BMB 222 - Laboratory in Organic Chemistry Credits: 1
- BMB 322 - Biochemistry Credits: 3
- BMB 323 - Biochemistry Laboratory Credits: 2

-Total Organic Chemistry Credits: 9

### Organic Chemistry Option 2

- CHY 251 - Organic Chemistry I Credits: 3
- CHY 253 - Organic Chemistry Laboratory I Credits: 2
- BMB 322 - Biochemistry Credits: 3
- BMB 323 - Biochemistry Laboratory Credits: 2

-Total Organic Chemistry Credits: 10

### Organic Chemistry Option 3

- CHY 251 - Organic Chemistry I Credits: 3
- CHY 252 - Organic Chemistry II Credits: 3
- CHY 253 - Organic Chemistry Laboratory I Credits: 2
- CHY 254 - Organic Chemistry Laboratory II Credits: 2

-Total Organic Chemistry Credits: 10

### Mathematics

- MAT 126 - Calculus I Credits: 4
- Or
- STS 232 - Principles of Statistical Inference Credits: 3

-Total Mathematics Credits: 3-4

### Physics Option 1

- PHY 105 - Descriptive Physics Credits: 4

-Total Physics Credits: 4

### Physics Option 2

- PHY 111 - General Physics I Credits: 4
- PHY 112 - General Physics II Credits: 4

-Total Physics Credits: 8

### Other Requirements for the B.A. in Zoology

Students are required 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 9 credits in General Education courses in Cultural Diversity and International Perspectives. In addition, the College of Natural Sciences, Forestry, and Agriculture requires 27 credits of General Education courses in Human Values and Social Context for the B.A. and at least 12 of those credits must be at the 200 level or above.

## Courses in Suggested Sequence for the B.A. in Zoology

### First Year - First Semester

- BIO 100 - Basic Biology Credits: 4
- CHY 121 - Introduction to Chemistry Credits: 3  
(Enrollment in CHY 121 requires readiness for MAT 122 or equivalent. Students who are not ready to take MAT 122 or its equivalent take CHY 121 in the second year.)
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- ENG 101 - College Composition Credits: 3  
or
- General Education Requirement<sup>1</sup> Credits: 3
- MAT 122 - Pre-Calculus Credits: 4
- NFA 117 - Issues and Opportunities Credits: 1

### First Year - Second Semester

- BIO 200 - Biology of Organisms Credits: 4
- CHY 122 - The Molecular Basis of Chemical Change Credits: 3
- CHY 124 - The Molecular Basis of Chemical Change Laboratory Credits: 1
- ENG 101 - College Composition Credits: 3  
If not taken in the first semester
- General Education Requirement<sup>1</sup> Credits: 3-6

### Second Year - First Semester

- BMB 221 - Organic Chemistry Credits: 3  
(See Footnote 3)  
with
- BMB 222 - Laboratory in Organic Chemistry Credits: 1
- STS 232 - Principles of Statistical Inference Credits: 3  
(See Footnote 4)
- Biological Sciences Area Choice<sup>2</sup> Credits: 3
- General Education Requirement or Elective Credits: 3
- International Perspective<sup>5</sup> Credits: 3

## Second Year - Second Semester

- Biological Sciences Area Choice<sup>2</sup> Credits: 3-5
- International Perspective<sup>5</sup> Credits: 2-4
- General Education Requirement or Elective Credits: 6-9

## Third Year - First Semester

- PHY 105 - Descriptive Physics Credits: 4  
(See Footnote 6)
- Biological Sciences Area Choice<sup>2</sup> Credits: 2-4
- International Perspective<sup>5</sup> Credits: 3
- General Education Requirement or Elective Credits: 3

## Third Year - Second Semester

- General Education Requirement or Elective Credits: 3-12
- Biological Sciences Area Choice<sup>2</sup> Credits: 3-4

## Fourth Year - First Semester

- Biological Sciences Area Choice<sup>2</sup> Credits: 3-4
- Capstone<sup>7</sup> Credits: 3
- General Education Requirements or Electives Credits: 7-10

## Fourth Year - Second Semester

- Biological Sciences Area Choice<sup>2</sup> Credits: 3-10
- General Education Requirements or Electives Credits: 4-12

## Footnotes

<sup>1</sup>See the General Education requirements for all students at the University. If BIO 400 (Biological Sciences Writing Intensive) is used to satisfy the General Education 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

<sup>2</sup>See above lists of courses in the 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) courses in areas III-V

<sup>3</sup>Alternatively, students may take CHY 251/253 and BMB 322/323 or CHY 251/253 and CHY 252/254

<sup>4</sup>Alternatively, students may take MAT 126

<sup>5</sup>See Other Requirements above for ways to satisfy this requirement for the B.A. degree

<sup>6</sup>Alternatively, students may take PHY 111 and 112

<sup>7</sup>The General Education capstone experience may be completed with BIO 388, 392, 402, 438, 447, 450, 463, or HON 499

## Concentration in Ecology

This concentration is intended for students interested in exposure to ecological principles within the context of a rigorous biological sciences curriculum. Students in this concentration must meet all of the requirements for the Zoology B.A. degree. The concentration also includes WLE 220 Introduction to Statistical Ecology and a requirement for a course on environmental influences. A total of 29-35 credits are required to complete the concentration depending on the selections made for each of the requirements.

Specific requirements:

### 1. Affiliated Sciences and Math

- WLE 220 - Introduction to Ecological Statistics Credits: 4  
This course can substitute for STS 232-Principles of Statistical Inference.

### 2. Area I. Cell and Molecular Biology

Free choice among Area I courses in the Zoology curriculum Credits: 3-4

### 3. Area II. Genetics

Free choice among Area II courses in the Zoology curriculum Credits: 3-5

### 4. Area III. Physiology

Free choice among Area III courses in the Zoology curriculum Credits: 3-5

### 5. Area IV. Biodiversity

- BIO 465 - Evolution Credits: 3
- In addition, 3 credits chosen from the Area IV courses in the Zoology curriculum Credits: 6-7

### 6. Area V. Ecology and Behavior

- BIO 319 - General Ecology Credits: 3  
Or
- SMS 300 - Marine Ecology Credits: 3  
Or
- WLE 200 - Ecology Credits: 3  
Choose one course from above.  
In addition: Choose 3 credits from the following courses:

6-7 credits total.

- BIO 205 - Field Natural History of Maine Credits: 4
- BIO 327 - Introductory Applied Entomology Credits: 4
- BIO 354 - Animal Behavior Credits: 3
- BIO 355 - Animal Behavior Laboratory Credits: 2
- BIO 434 - Avian Biology and Ecology Credits: 3
- BIO 437 - Avian Biology and Ecology Laboratory Credits: 1
- BIO 447 - Experimental Ecology Credits: 4
- BIO 455 - Biological Invasions Credits: 4
- BIO 463 - River Ecology Credits: 4
- BIO 468 - Lake Ecology Credits: 3
- BIO 476 - Paleoecology Credits: 4
- EES 475 - Field Studies in Ecology Credits: 1-3
- PSE 457 - Plant Pathology Credits: 4
- PSE 469 - Soil Microbiology Credits: 3
- SFR 457 - Tree Pests and Disease Credits: 3
- WLE 201 - Ecology Laboratory Credits: 3
- WLE 423 - Wetland Ecology and Conservation Credits: 4

## 7. Primary and Secondary Producers

Choose at least one course labeled A and one labeled P from Areas I-V in the Zoology curriculum. These courses can also satisfy requirements in Areas I-V for the basic Zoology major and so do not add to the number of credits needed beyond the basic Zoology major.

## 8. Area VI. Environmental Influences

Three credits are required. Choose from these courses:

- EES 140 - Soil Science Credits: 3
- EES 141 - Soil Science Laboratory Credits: 1
- ERS 101 - Introduction to Geology Credits: 4
- ERS 102 - Environmental Geology of Maine Credits: 4
- ERS 108 - Beaches and Coasts Credits: 3
- INT 482 - (SBE, PSE) Pesticides and the Environment Credits: 3
- PSE 320 - Soil Organic Matter Management Credits: 3
- SFR 406 - Remote Sensing Image Interpretation and Forest Mapping Credits: 3

## 9. Field Experience

Choose at least one course from this list. This course can also satisfy one of the areas above.

- BIO 205 - Field Natural History of Maine Credits: 4
- BIO 355 - Animal Behavior Laboratory Credits: 2
- BIO 430 - Ecology and Systematics of Aquatic Insects Credits: 4
- BIO 437 - Avian Biology and Ecology Laboratory Credits: 1



- BIO 463 - River Ecology Credits: 4
- EES 475 - Field Studies in Ecology Credits: 1-3
- WLE 423 - Wetland Ecology and Conservation Credits: 4

## 10. Capstone

Choose one of these courses\*:

- BIO 388 - Research Capstone in Biology Credits: 1-3
- BIO 392 - Independent Study Capstone in Biology Credits: 1-3
- BIO 447 - Experimental Ecology Credits: 4
- BIO 463 - River Ecology Credits: 4
- HON 499 - Honors Thesis Credits: 3  
(Must be a topic in Biology and the thesis advisor should be in SBE).

## 11. Writing requirement (students in the Honors program are exempt)

One course required. Choose from the following courses\*:

### **Return to top of Page**

- ENG 212 - Persuasive and Analytical Writing Credits: 3
- ENG 317 - Business and Technical Writing Credits: 3  
These courses satisfy the general education writing intensive requirement and so do not add to the number of credits needed beyond the basic Zoology major.

## **Minor**

### **Minor: Animal and Veterinary Sciences**

#### **OVERVIEW OF DEGREE REQUIREMENTS**

**Minimum number of credits required to earn minor: 18**

**GPA requirements to earn minor: 2.0**

**Minimum Grade requirements for courses to count toward minor: C- or higher**

**Contact Information:** Mary Fernandez, Student Academic Services Coordinator, 201A Rogers Hall, 207-581-2938, mary.fernandez@umit.maine.edu

This minor is intended for students from various backgrounds who wish to adapt their education to animals: dairy, livestock, or equine. Prior to enrolling in the minor, students must consult with the Student Academic Services Coordinator in the School of

Food and Agriculture to select the courses most appropriate to their background and career goals, and to discuss any course substitutions which may be appropriate. Students who wish to emphasize equine classes including equitation classes should consider the Equine Studies minor rather than the Animal and Veterinary Science minor.

## Required Courses:

- AVS 145 - Animal Science Credits: 4
- AVS 346 - Dairy Cattle Technology Credits: 3
- AVS 455 - Animal Nutrition Credits: 4
- AVS 466 - Livestock Feeds and Feeding Credits: 2

Plus at least 5 credits from the following list:

- AVS 203 - Equine Management Credits: 3
- AVS 249 - Laboratory and Companion Animal Science Credits: 2
- AVS 347 - Dairy Cattle Technology Laboratory Credits: 2
- AVS 349 - Livestock Management Credits: 3
- AVS 351 - Animal Science Techniques Credits: 3
- AVS 405 - Livestock and Companion Animal Behavior Credits: 3
- AVS 437 - Animal Diseases Credits: 3
- AVS 480 - Physiology of Reproduction Credits: 3

## Minor: Aquaculture

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** 2.0

**Minimum Grade requirements for courses to count toward minor:** All students completing the Aquaculture minor must have a "C-" or better in all classes used to satisfy the minor.

**Contact Information:** William Ellis, Associate Professor of Oceanography and Associate Director, 360 Aubert Hall, 207-581-4360, [wge@umit.maine.edu](mailto:wge@umit.maine.edu)

The minor in aquaculture is designed for students in the College of Natural Sciences, Forestry and Agriculture who wish to apply the knowledge and skills developed through their major programs to the field of aquaculture, i.e. the science and business of producing aquatic animals and plants useful to humans. The minor consists of a common core plus electives from a recommended group:

## Core:

- SMS 211 - Introduction to Aquaculture Credits: 3
- SMS 401 - Critical Issues in Aquaculture Credits: 1
- SMS 420 - Fish Aquaculture I Credits: 3
- SMS 449 - Aquaculture Systems Credits: 3

## Plus at least 8 credits from the following:

- FSN 440 - Utilization of Aquatic Food Resources Credits: 3
- SMS 309 - Techniques in Shellfish Aquaculture Credits: 2
- SMS 421 - Fish Aquaculture II Credits: 3
- SMS 422 - Biology of Fishes Credits: 3
- SMS 467 - Fish Nutrition and Feeding Credits: 3

## Minor: Biochemistry

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** 2.0

**Minimum Grade requirements for courses to count toward minor:** None

**Contact Information:** Robert Gundersen, Chair, Hitchner Hall Room 117, (207) 581-2802, gundersn@maine.edu OR

John Singer, Undergraduate Coordinator, Hitchner Hall, Room 280, (207) 581-2808, jsinger@maine.edu

## Courses:

- BMB 322 - Biochemistry Credits: 3
- BMB 323 - Biochemistry Laboratory Credits: 2
- BMB 460 - Advanced Biochemistry Credits: 3
- Plus 10 credits of upper (300 or higher) level courses offered by the department and required for the major

## Minor: Biology

## OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor: 22**

**GPA requirements to earn minor: 2.0**

**Minimum Grade requirements for courses to count toward minor:** Biology minors must have a "C" or better in BIO 100 and BIO 200.

**Contact Information:** Ann Dieffenbacher-Krall, Assistant Director of School of Biology and Ecology, 100 Murray Hall, (207) 581-2510, annd@maine.edu

The minor in Biology is designed for students in other fields who would like to develop a basic understanding of modern biology. The minor is not open to students majoring or minoring in Botany or Zoology. The requirements for the minor in Biology include the courses listed below. Students must obtain a minimum grade of C in BIO 100 and BIO 200 and a minimum GPA for the minor of 2.0.

### Courses:

- BIO 100 - Basic Biology Credits: 4
  - BIO 200 - Biology of Organisms Credits: 4
  - BMB 280 - Introduction to Molecular and Cellular Biology Credits: 3
  - **or**
  - BIO 480 - Cell Biology Credits: 3
  - BIO 319 - General Ecology Credits: 3
  - **or**
  - SMS 300 - Marine Ecology Credits: 3
  - **or**
  - WLE 200 - Ecology Credits: 3
  - Any courses from Biological Sciences Areas I-V in Biology BA and BS programs<sup>1,2</sup> Credits: 8
- <sup>1</sup>Students majoring in Biochemistry, Microbiology, or Molecular and Cellular Biology must choose from Areas III, IV, and V only, and the courses must not be BMB courses
- <sup>2</sup>Students majoring in Animal and Veterinary Sciences, Ecology and Environmental Sciences, Marine Science, or Wildlife Ecology must choose courses from Areas I-V that are not on the list of courses that count towards their major

## Minor: Botany

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor: 22**

**GPA requirements to earn minor: 2.0**

**Minimum Grade requirements for courses to count toward minor:** Botany minors must have a "C" or better in BIO 100 and BIO 200.

**Contact Information:** Ann Dieffenbacher-Krall, Assistant Director of School of Biology and Ecology, 100 Murray Hall, (207) 581-2510, annd@maine.edu

The minor in Botany is designed for students in other fields who would like to develop a basic understanding of modern plant biology. The minor is not open to students majoring or minoring in Biology or Zoology. The requirements for the minor in Botany include the courses listed below. Students must obtain a minimum grade of C in BIO 100 and BIO 200 and a minimum GPA for the minor of 2.0.

## Courses:

- BIO 100 - Basic Biology Credits: 4
- BIO 200 - Biology of Organisms Credits: 4
- Any courses, at least three of which must be plant courses (P), from Biological Sciences Areas I-V in Botany B.A. and B.S. programs<sup>1,2</sup> Credits: 14
  - <sup>1</sup>Students majoring in Biochemistry, Microbiology, or Molecular and Cellular Biology must choose courses that are not BMB courses.
  - <sup>2</sup>Students majoring in Animal and Veterinary Sciences, Ecology and Environmental Sciences, Environmental Horticulture, Marine Science, Sustainable Agriculture, or Wildlife Ecology must choose courses from Areas I-V that are not on the list of courses that count towards their major.

## Minor: Communication Sciences and Disorders

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** None.

**Minimum Grade requirements for courses to count toward minor:** Students must earn a minimum of "C" in each course applied to the minor.

**Contact Information:** 5724 Dunn Hall, Orono, ME 04469, 581-2403

The Department of Communication Sciences and Disorders offers an undergraduate minor. The opportunity to complete minor studies in CSD may appeal to students majoring in English, Education, Biology, Human Development, Music, Anthropology, Foreign Languages, Theatre, Social Work, Nursing, and other disciplines. In addition to providing students with the opportunity to engage in concentrated study in the field of Communication Sciences and Disorders, a minor in CSD may provide the student with the necessary coursework to pursue graduate study in the fields of speech-language pathology and/or audiology.

For specific current contact information, please contact the department office at 581-2403.

## Required Courses

Students must earn a minimum of "C" in each course applied to the minor. A minimum of 12 CSD credit hours must be taken at the University of Maine. The Department of Communication Sciences and Disorders must approve all transfer courses applied to the minor.

- CSD 130 - Introduction to Communication Sciences and Disorders Credits: 3
- 15 additional credit hours of CSD courses

## Minor: Earth Sciences

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** None.

**Minimum Grade requirements for courses to count toward minor:** C-

**Contact Information:** Alice R. Kelley, Undergraduate Coordinator, 111 Bryand Global Science Center, 207-581-2056, akelley@maine.edu

A minor in Earth Sciences consists of minimum of 18 credits of courses in the School of Earth and Climate Sciences, no more than 8 of which are at the 1xx level. No grade below a C- will be accepted toward these requirements.

### Courses:

- ERS 101 - Introduction to Geology Credits: 4
- ERS 102 - Environmental Geology of Maine Credits: 4
- ERS 103 - Dynamic Earth Credits: 3
- ERS 108 - Beaches and Coasts Credits: 3
- ERS 121 - Humans and Global Change Credits: 3
- ERS 200 - Earth Systems Credits: 4
- ERS 201 - Global Environmental Change Credits: 4
- ERS 209 - Geology of Maine Credits: 3
- ERS 210 - Geology Applied to Engineering Credits: 3
- ERS 211 - Geology Applied to Engineering Laboratory Credits: 1
- ERS 230 - Earth and Climate Science Geomatics Credits: 4
- ERS 240 - The Atmosphere Credits: 4
- ERS 312 - Geochemistry Credits: 3
- ERS 315 - Principles of Sedimentology and Stratigraphy Credits: 4
- ERS 316 - Structural Geology Credits: 4
- ERS 317 - Introduction to Geophysics Credits: 3
- ERS 330 - Mineralogy Credits: 4
- ERS 350 - Fresh-Water Flow Credits: 3
- ERS 420 - Computer Scripting for Data Analysis Credits: 3

- ERS 433 - Igneous and Metamorphic Petrology Credits: 4
- ERS 441 - Glaciers and Our Landscape Credits: 3

## Minor: Ecology and Environmental Sciences

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 19

**GPA requirements to earn minor:** None.

**Minimum Grade requirements for courses to count toward minor:** None.

**Contact Information:** Julie Eubanks, Program Coordinator, 246 Nutting Hall, (207) 581-3176

The minor in Ecology and Environmental Sciences is designed to expose students to the basic issues in the physical, biological, and social sciences associated with understanding natural resource and environmental issues in the modern world. The minor will be awarded to students who complete the required credit hours, as outlined below.

### Courses:

- EES 100 - Human Population and the Global Environment Credits: 3  
and
- EES 489 - Critical Issues in Ecology and Environmental Sciences Policy Credits: 4

### Choose one from each of the following groups

Choose one from each of the following groups

#### **Earth Sciences**

- EES 140 - Soil Science Credits: 3  
or
- ERS 101 - Introduction to Geology Credits: 4

#### **Ecology**

- WLE 200 - Ecology Credits: 3  
or
- BIO 319 - General Ecology Credits: 3

#### **Field Ecology**

- BIO 205 - Field Natural History of Maine Credits: 4

#### **Policy**

- ECO 377 - Introduction to Natural Resource Economics and Policy Credits: 3  
or
- EES 324 - Environmental Protection Law and Policy Credits: 3

- or
  - ECO 381 - Sustainable Development Principles and Policy Credits: 3
  - or
  - WLE 323 - Introduction to Conservation Biology Credits: 3
- Total Credit Hours: 19 or 20

## **Minor: Economics**

### **OVERVIEW OF DEGREE REQUIREMENTS**

**Minimum number of credits required to earn minor: 18**

**GPA requirements to earn minor: 2.0**

**Minimum Grade requirements for courses to count toward minor: None.**

**Contact Information:** Karen Moffet, School of Economics, 206 Winslow Hall, (207) 581-3154.

Students must obtain a minimum 2.0 grade point average in ECO courses taken pursuant to requirements of the minor. Also, at least 9 of the required 18 credits must be taken at UMaine.

### **Required Courses:**

- ECO 120 - Principles of Microeconomics Credits: 3
- ECO 121 - Principles of Macroeconomics Credits: 3

### **And one of the following:**

- ECO 321 - Intermediate Macroeconomics Credits: 3
- ECO 350 - Intermediate Microeconomic Theory Credits: 3
- ECO 420 - Intermediate Microeconomic Theory with Calculus Credits: 3

### **Economics Elective Courses**

Economic courses of the student's choosing, totaling nine (9) credits.

## **Minor: Environmental Horticulture**

### **OVERVIEW OF DEGREE REQUIREMENTS**



**Minimum number of credits required to earn minor: 21**

**GPA requirements to earn minor: 2.0**

**Minimum Grade requirements for courses to count toward minor:** A "C-" or better is required for all PSE courses.

**Contact Information:** Mary Fernandez, Student Academic Services Coordinator, 201A Rogers Hall, 207-581-2938, mary.fernandez@umit.maine.edu

This minor is intended for students in other fields of study who have an interest in obtaining basic knowledge in the area of horticulture. It allows students to explore the art and science of growing plants and utilizing them in landscape designs. The students take fundamental courses in plant science, soil science, and plant identification. Students may then build off of this base of horticultural knowledge with elective courses that specialize in plant production, landscape design, or botany. Courses in this minor provide hands-on experience in horticultural facilities including the Roger Clapp Greenhouses, the Lyle E. Littlefield Gardens, and the Design Studio.

**Please note:**

The following courses are not acceptable course choices for Sustainable Agriculture majors:

BIO 327  
PSE 320  
PSE 403  
PSE 415  
PSE 440  
PSE 457

## Required Courses:

- EES 140 - Soil Science Credits: 3
- EES 141 - Soil Science Laboratory Credits: 1
- PSE 100 - Plant Science Credits: 4
- PSE 219 - SL: Herbaceous Landscape Plants Credits: 3
- PSE 221 - Woody Landscape Plants Credits: 4

## Plus one from the following list:

- PSE 227 - Landscape Design and Construction Techniques Credits: 4
- PSE 325 - Turfgrass Management Credits: 3
- PSE 415 - Greenhouse Management Credits: 4
- PSE 424 - Nursery Management Credits: 3

## Plus one from the following list:

- BIO 310 - Plant Biology Credits: 4
- BIO 327 - Introductory Applied Entomology Credits: 4
- BIO 342 - Plants in Our World Credits: 3
- BIO 452 - Plant Physiology Credits: 3
- BIO 464 - Taxonomy of Vascular Plants Credits: 4
- PSE 320 - Soil Organic Matter Management Credits: 3
- PSE 328 - Landscape Design Credits: 4
- PSE 403 - Weed Ecology and Management Credits: 3
- PSE 410 - Plant Propagation Credits: 4
- PSE 440 - Environmental Soil Chemistry and Plant Nutrition Credits: 3
- PSE 457 - Plant Pathology Credits: 4
- PSE 469 - Soil Microbiology Credits: 3
- SFR 439 - Plant Anatomy Structure and Function Credits: 3

## **Minor: Environmental Management and Policy**

### **OVERVIEW OF DEGREE REQUIREMENTS**

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** Economics (ECO) coursework for minor must be completed with a 2.0 cumulative average.

**Minimum Grade requirements for courses to count toward minor:** None.

**Contact Information:** Karen Moffet, School of Economics, 206 Winslow Hall, (207) 581-3154.

Students must obtain a minimum 2.0 grade point average in ECO courses taken pursuant to requirements of the minor.

(Students need to check pre-requisites for the advanced classes.)

Other courses may be substituted with the consent of the SOE Undergraduate Coordinator or Director.

**Take one of:**

- ECO 120 - Principles of Microeconomics Credits: 3
- ECO 410 - Accelerated Introductory Economics Credits: 3

**Take one of:**

- ECO 180 - Citizens, Energy & Sustainability Credits: 3

- ECO 190 - World Food Supply, Population and the Environment Credits: 3
- INT 105 - (ECO, REP) Environmental Policy Credits: 3

Take four of:

- ECO 381 - Sustainable Development Principles and Policy Credits: 3
- ECO 422 - Rural Economic Development Credits: 3
- ECO 473 - Economic and Policy Applications of GIS Credits: 3
- ECO 477 - Economics of Environmental and Resource Management Credits: 3
- ECO 479 - Land Use Planning Credits: 3
- EES 324 - Environmental Protection Law and Policy Credits: 3

## Minor: Equine Studies

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** 2.0

**Minimum Grade requirements for courses to count toward minor:** C- or higher

**Contact Information:** Mary Fernandez, Student Academic Services Coordinator, 201A Rogers Hall, 207-581-2938, mary.fernandez@umit.maine.edu

This minor 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 Student Academic Services Coordinator in the School of Food and Agriculture to select courses most appropriate to their background and career goals, and to discuss any course substitutions which may be appropriate.

### Required Courses:

- AVS 203 - Equine Management Credits: 3
- AVS 303 - Equine Management Cooperative Credits: 2
- AVS 353 - Equine Reproduction and Breeding Management Credits: 3

Plus at least 10 credits from the following lists, but no more than one course from Group B

## Group A - Equine courses

AVS 243, 253, and 333 can count twice in the Equine Studies minor.

- AVS 196 - Introduction to Equine Cooperative Credits: 0-1
- AVS 243 - Centered Riding Principles of Equitation Credits: 3
- AVS 253 - Principles of Western Riding Credits: 3
- AVS 333 - Introduction to Natural Horse Training Credits: 3
- AVS 393 - Training the Standardbred Horse Credits: 3
- AVS 397 - Equine Internship Credits: 1-4
- AVS 433 - Equine Exercise Physiology Credits: 3
- AVS 443 - Advanced Centered Riding Credits: 3

## Group B - Non-Equine courses relevant to Equine Studies

AVS majors cannot use AVS courses to meet this requirement.

- AVS 368 - Independent Study in the Animal Sciences Credits: Ar
- AVS 437 - Animal Diseases Credits: 3
- AVS 455 - Animal Nutrition Credits: 4
- BIO 377 - Medical Physiology Credits: 3
- BMB 322 - Biochemistry Credits: 3
- BMB 420 - Infectious Disease Credits: 3
- BMB 440 - Introductory Immunology Credits: 3
- BUA 201 - Principles of Financial Accounting Credits: 3
- ECO 254 - Small Business Economics and Management Credits: 3
- EHD 202 - Education in a Multicultural Society Credits: 3
- PSE 101 - Cropping Systems Credits: 4
- PSE 105 - Principles of Sustainable Agriculture Credits: 3
- PSE 305 - Problems in Plant, Soil and Environmental Sciences Credits: Ar

## Minor: Fisheries

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor: 21**

**GPA requirements to earn minor: 2.0**

**Minimum Grade requirements for courses to count toward minor: None.**

**Contact Information:** William Ellis, Associate Professor of Oceanography and Associate Director, 360 Aubert Hall, 207-581-4360, wge@umit.maine.edu

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. Students enrolled in Wildlife Ecology are not eligible for the Fisheries minor, but instead should pursue a concentration in Fisheries. The Fisheries Minor is designed to partially fulfill certification requirements of the American Fisheries Society for fishery biologists. Current certification requirements can be found on our website.

## Requirements:

- WLE 200 - Ecology Credits: 3  
or
- BIO 319 - General Ecology Credits: 3  
or
- SMS 300 - Marine Ecology Credits: 3  
Required:
- WLE 410 - Wildlife Population Dynamics and Conservation Credits: 3

SMS 321 or WLE 340 is required plus one additional course from the following list:

- SMS 211 - Introduction to Aquaculture Credits: 3
- SMS 230 - Introduction to Marine Policy and Fisheries Management Credits: 3
- SMS 321 - Introduction to Fisheries Science Credits: 3
- SMS 422 - Biology of Fishes Credits: 3
- WLE 340 - Freshwater Fisheries Ecology and Management Credits: 3

One of the following courses:

- BIO 447 - Experimental Ecology Credits: 4
- BIO 468 - Lake Ecology Credits: 3
- SMS 302 - Oceanography Credits: 3

One of the following courses:

- STS 232 - Principles of Statistical Inference Credits: 3
- WLE 220 - Introduction to Ecological Statistics Credits: 4

One of the following courses:

- ECO 377 - Introduction to Natural Resource Economics and Policy Credits: 3
- SMS 230 - Introduction to Marine Policy and Fisheries Management Credits: 3
- WLE 470 - Wildlife Policy and Administration Credits: 3
- Minimum course prerequisites for the fisheries minor are BIO 100, BIO 200 (or SMS 201 & 203), MAT 111 and ECO 100 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

## Minor: Food Science

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** 2.0

**Minimum Grade requirements for courses to count toward minor:** C- or better

**Contact Information:** Mary Fernandez, Student Academic Services Coordinator, 201A Rogers Hall, 207-581-2938, mary.fernandez@umit.maine.edu

**Residency Requirement:** 15 of the 18 credits for this minor must be taken at the University of Maine

This minor allows graduates with basic science degrees to have some training in food science and to be more competitive in the job market. It 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. Food companies will hire graduates with degrees in basic sciences and engineering.

Completion of the Food Science minor does not satisfy the reduced professional time required to sit for the Certified Food Scientist examination. A person with a B.S. degree in Food Science or the Food Science concentration may take the CFS exam after 3 years of professional employment; persons with a bachelor's degree in a related science may not take the exam until 6 years of employment in food science.

The certification examination covers product development, quality assurance and control, food engineering, food chemistry and food analysis, food law, food microbiology, food safety, food engineering and sensory evaluation and consumer testing. This breadth of knowledge is not possible with this minor.

#### **Please note:**

- No more than 3 credits of FSN 396-Field Experience in Food Science and Human Nutrition may be counted towards the 18-credit total
- No more than 3 credits of FSN 397-Independent Study in Food Science and Human Nutrition may be counted towards the 18-credit total

- 15 of the 18 credits for this minor must be taken at the University of Maine.
- Seniors may take the 500-level graduate classes, if they meet the prerequisite.

## Required Course:

- FSN 330 - Introduction to Food Science Credits: 3

## The additional 15 credits may include:

- ECO 190 - World Food Supply, Population and the Environment Credits: 3
- FSN 121 - Brewing with Food Science Credits: 3
- FSN 238 - Applied Food Microbiology and Sanitation Credits: 3
- FSN 340 - Food Processing Laboratory Credits: 1
- FSN 396 - Field Experience in Food Science and Human Nutrition Credits: 1 - 16
- FSN 397 - Independent Studies Credits: 1-6
- FSN 436 - Food Law Credits: 3
- FSN 438 - Food Microbiology Credits: 3
- FSN 440 - Utilization of Aquatic Food Resources Credits: 3
- FSN 450 - Food Biotechnology Credits: 3
- FSN 482 - Food Chemistry Credits: 3
- FSN 483 - Food Chemistry Laboratory Credits: 1
- FSN 485 - Introduction to Food Engineering Principles Credits: 3
- FSN 486 - Food Engineering Laboratory Credits: 1
- FSN 502 - Food Preservation Credits: 3
- FSN 520 - Food Product Development Credits: 3
- FSN 585 - Sensory Evaluation I Credits: 3
- FSN 586 - Sensory Evaluation II Credits: 3
- FSN 587 - Food Analysis Credits: 3 (see Graduate Catalog for course descriptions)

## Minor: Forest Ecosystem Science

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor: 18**

**GPA requirements to earn minor: 2.0**

**Minimum Grade requirements for courses to count toward minor: None.**

**Contact Information:** William H. Livingston, Associate Director for Undergraduate Programs, 201b Nutting Hall, 581-2990, WilliamL@maine.edu

Students minoring in Forest Ecosystems Science must be assigned an advisor from the School of Forest Resources faculty.

## Core Requirements:

- BIO 100 - Basic Biology Credits: 4  
or
- BIO 222 - Biology: The Living Science Credits: 3  
or
- SFR 100 - Introduction to Forest Biology Credits: 3
- SFR 102 - Structure and Function of Woody Plants Laboratory Credits: 1
- SFR 107 - Forest Vegetation Credits: 3

## 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.

- SFR 101 - Introduction to Forest Resources Credits: 1
- SFR 111 - Forest Through Time Credits: 1
- SFR 112 - Forests Through Time: Discussions Credits: 2
- SFR 205 - Forest Measurements and Statistics Credits: 3
- SFR 208 - Geomatics, Coordinate Geometry, and GPS Credits: 4
- SFR 349 - Applied Forest Ecology and Silviculture Credits: 4
- SFR 400 - Applied Geographic Information Systems Credits: 4
- SFR 406 - Remote Sensing Image Interpretation and Forest Mapping Credits: 3
- SFR 407 - Forest Ecology Credits: 3
- SFR 408 - Silviculture Credits: 3
- SFR 409 - Forest Ecology and Silviculture Field Laboratory Credits: 2
- SFR 410 - Forest Regeneration Credits: 3
- SFR 444 - Forest Resources Economics Credits: 3
- SFR 446 - Forest Resources Policy Credits: 3
- SFR 457 - Tree Pests and Disease Credits: 3
- SFR 458 - Tree Pests and Disease Lab Credits: 1

## Minor: Forest Products

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor: 19**



**GPA requirements to earn minor:** 2.0

**Minimum Grade requirements for courses to count toward minor:** None.

**Contact Information:** William H. Livingston, Associate Director for Undergraduate Programs, 201b Nutting Hall, 581-2990, WilliamL@maine.edu

Students minoring in Forest Products must be assigned an academic advisor from the faculty of Wood Science and Technology in the School of Forest Resources and must obtain that advisor's signature when registering for SFR courses.

## Required Courses:

- SFR 215 - Introduction to Forest Bioproducts and Bioenergy Credits: 3
- SFR 346 - Special Problems in Forest Operations, Bioproducts, and Bioenergy Credits: Ar
- SFR 450 - Processing of Biomaterials Credits: 4
- SFR 453 - Biocomposite Materials Credits: 4
- SFR 455 - Bioenergy Sources, Systems and Environmental Effects Credits: 3
- SFR 464 - Forest Resources Business, Marketing and Entrepreneurship Credits: 3

## Minor: Forest Recreation Management

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 19

**GPA requirements to earn minor:** 2.0

**Minimum Grade requirements for courses to count toward minor:** None.

**Contact Information:** William H. Livingston, Associate Director for Undergraduate Programs, 201b Nutting Hall, 581-2990, WilliamL@maine.edu

Students minoring in Forest Recreation Management must be assigned an advisor from the Faculty of Parks, Recreation and Tourism in the School of Forest Resources and must obtain the advisor's signature when registering for SFR courses.

## Required Courses:

- SFR 150 - Introduction to Tourism Credits: 3
- SFR 220 - Environment and Society Credits: 3
- SFR 228 - Forest Recreation Management Credits: 3
- SFR 434 - Recreation Site Planning and Management Credits: 3
- SFR 452 - Environmental Interpretation Credits: 4

Plus one of the following:

- SFR 236 - Commercial Outdoor Recreation Management Credits: 3
- SFR 446 - Forest Resources Policy Credits: 3
- SFR 479 - Environmental Attitudes and Behaviors Credits: 3
- SFR 480 - Wilderness and Protected Areas Management Credits: 3

## **Minor: Human Nutrition**

### **OVERVIEW OF DEGREE REQUIREMENTS**

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** 2.0

**Minimum Grade requirements for courses to count toward minor:** C- or better

**Contact Information:** Mary Fernandez, Student Academic Services Coordinator, 201A Rogers Hall, 207-581-2938, mary.fernandez@umit.maine.edu

**Residency Requirement:** 15 of the 18 credits for this minor must be taken at the University of Maine

This minor is intended for students in other fields of study who have an interest in obtaining a basic understanding of human nutrition. Students should choose courses that will complement their academic background and further their individual career goals.

Please Note:

- The minor does not lead to credentialing in the field of dietetics without further study
- 15 of the 18 credits for this minor must be taken at the University of Maine

### **Required Course:**

- FSN 101 - Introduction to Food and Nutrition Credits: 3

Plus 15 credits from the following list:

- FSN 103 - Science of Food Preparation Credits: 4
- FSN 202 - Foodservice Management Credits: 3
- FSN 230 - Nutritional and Medical Terminology Credits: 1
- FSN 238 - Applied Food Microbiology and Sanitation Credits: 3
- FSN 265 - Functional Concepts in Nutrition Credits: 3
- FSN 270 - World Food and Nutrition Credits: 3
- FSN 301 - Life Cycle Nutrition Credits: 3
- FSN 305 - Foods Laboratory Credits: 1
- FSN 330 - Introduction to Food Science Credits: 3
- FSN 401 - Community Nutrition Credits: 4
- FSN 410 - Human Nutrition and Metabolism Credits: 3
- FSN 412 - Medical Nutrition Therapy I Credits: 2
- FSN 420 - Medical Nutrition Therapy II Credits: 4
- FSN 430 - Counseling and Diet Therapy Credits: 3
- FSN 436 - Food Law Credits: 3
- FSN 482 - Food Chemistry Credits: 3
- FSN 501 - Advanced Human Nutrition Credits: 3
- FSN 508 - Nutrition and Aging Credits: 3 (see Graduate Catalog for course descriptions)

## **Minor: Microbiology**

### **OVERVIEW OF DEGREE REQUIREMENTS**

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** 2.0

**Minimum Grade requirements for courses to count toward minor:** None

**Contact Information:** Robert Gundersen, Chair, Hitchner Hall Room 117, (207) 581-2802, gundersn@maine.edu OR

John Singer, Undergraduate Coordinator, Hitchner Hall, Room 280, (207) 581-2808, jsinger@maine.edu

### **Courses:**

- BMB 300 - General Microbiology Credits: 3
- BMB 305 - General Microbiology Laboratory Credits: 2
- BMB 322 - Biochemistry Credits: 3
- BMB 323 - Biochemistry Laboratory Credits: 2
- Plus 8 credits of upper (300 or higher) level microbiology courses required for the major

## **Minor: Molecular and Cellular Biology**

## OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** 2.0

**Minimum Grade requirements for courses to count toward minor:** A "C or better" is required in "Introduction to Molecular and Cellular Biology" (BMB 280) to continue in the required, upper-level BMB courses.

**Contact Information:** Robert Gundersen, Chair, Hitchner Hall Room 117, (207) 581-2802, gundersn@maine.edu OR

John Singer, Undergraduate Coordinator, Hitchner Hall, Room 280, (207) 581-2808, jsinger@maine.edu

### Courses:

- BMB 280 - Introduction to Molecular and Cellular Biology Credits: 3
- BMB 322 - Biochemistry Credits: 3
- BMB 323 - Biochemistry Laboratory Credits: 2
- BMB 400 - Molecular Genetics Credits: 3
- Plus 7 credits of upper (300 or higher) level courses offered by the department and required for the major

## Minor: Neuroscience

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** Neuroscience minors require a cumulative 2.0 GPA in all courses taken in the minor.

**Minimum Grade requirements for courses to count toward minor:** None.

**Contact Information:** Ann Dieffenbacher-Krall, Assistant Director of School of Biology and Ecology, 100 Murray Hall, (207) 581-2510, annd@maine.edu

The minor in Neuroscience is designed for students who would like to develop a basic understanding of modern neuroscience. The requirements for the minor include the courses listed below. All students must obtain a minimum GPA of 2.0 in the minor. Students majoring in Biology, Zoology, or Psychology must include 12 credits from outside the department of their major, and students majoring in other fields must include at least 9 hours of BIO and 9 hours of PSY designed courses. Introductory Chemistry is strongly advised.

### Required Core Courses (6 credits)

- BIO 307 - Introduction to Neuroscience Credits: 3
- PSY 365 - Biopsychology and Behavioral Neuroscience Credits: 3

## Intermediate Courses; Choose at least two (6-9 credits)

- BIO 474 - Neurobiology Credits: 3
- PSY 465 - Hormones, Brain and Behavior Credits: 3
- PSY 466 - Cognitive Neuroscience Credits: 3

## Related Courses; Choose as needed to complete the 18 credit requirement:

- BIO 329 - Vertebrate Biology Credits: 3
- BIO 336 - Developmental Biology Credits: 4
- BIO 350 - Concepts and Applications of Genetics Credits: 3
- BIO 354 - Animal Behavior Credits: 3
- BIO 377 - Medical Physiology Credits: 3
- BIO 438 - Morphogenesis in Development and Disease Credits: 3
- BIO 462 - Principles of Genetics Credits: 3
- BIO 465 - Evolution Credits: 3
- BIO 479 - Endocrinology Credits: 3
- BIO 480 - Cell Biology Credits: 3
- PSY 422 - Infancy: Neurobehavioral Development Credits: 3
- PSY 350 - Cognition Credits: 3
- PSY 361 - Sensation and Perception Credits: 3
- PSY 401 - Health Psychology Credits: 3

## Minor: Plant Science

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor: 21**

**GPA requirements to earn minor: 2.0**

**Minimum Grade requirements for courses to count toward minor:** A "C-" or better is required for all PSE courses.

**Contact Information:** Mary Fernandez, Student Academic Services Coordinator, 201A Rogers Hall, 207-581-2938, mary.fernandez@umit.maine.edu

This minor includes courses that present the underlying principles distinguishing sustainable agriculture from conventional chemical-based agriculture. The minor includes several courses that introduce students to the philosophy, terminology and science that form the foundation of agricultural systems that are ecologically-based. Upper level classes build on the foundation classes to give students practical knowledge in the management of crops in ways that are consistent with maintaining healthy soils, decreasing weed and pest populations, and growing nutritional food crops while minimizing or eliminating the use of toxic pesticides and chemical fertilizers.

Please note:

- The following courses are not acceptable course choices for Environmental Horticulture majors; PSE 403, PSE 410, PSE 415, and PSE 457.
- The following courses are not acceptable course choices for Sustainable Agriculture majors; PSE 101, PSE 403, PSE 415, PSE 440, PSE 457 and PSE 479.
- PSE 101 - Cropping Systems is offered Spring - even years.

### Required Courses:

- BIO 452 - Plant Physiology Credits: 3
- PSE 100 - Plant Science Credits: 4
- PSE 101 - Cropping Systems Credits: 4
- EES 140 - Soil Science Credits: 3
- EES 141 - Soil Science Laboratory Credits: 1

### Plus two from the following list:

- BIO 464 - Taxonomy of Vascular Plants Credits: 4
- PSE 403 - Weed Ecology and Management Credits: 3
- PSE 410 - Plant Propagation Credits: 4
- PSE 415 - Greenhouse Management Credits: 4
- PSE 440 - Environmental Soil Chemistry and Plant Nutrition Credits: 3
- PSE 457 - Plant Pathology Credits: 4
- PSE 479 - Crop Ecology and Physiology Credits: 3
- SFR 439 - Plant Anatomy Structure and Function Credits: 3
- WLE 423 - Wetland Ecology and Conservation Credits: 4

## Minor: Pre-Medical Studies

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 43

**GPA requirements to earn minor:** 2.0

**Minimum Grade requirements for courses to count toward minor:** None.

**Contact Information:** Ann Dieffenbacher-Krall, Assistant Director of School of Biology and Ecology, 100 Murray Hall, (207) 581-2510, annd@maine.edu

The courses outlined below meet the entrance requirements of the majority of professional schools and colleges offering post-baccalaureate programs in the health professions. Students should plan these courses in addition to the specific requirements of their academic major. The Health Professions Career Specialist can help students research the admission requirements of specific schools.

Students in majors with extensive overlap with the minor in Pre-medical Studies are not eligible for this minor. These majors include, but are not limited to, Animal and Veterinary Sciences (Pre-Veterinary Concentration), Biochemistry, Bioengineering, Biology, Botany, Food Science and Human Nutrition (Food Science Concentration), Microbiology, Molecular and Cellular Biology, and Zoology.

## Courses:

- BIO 100 - Basic Biology Credits: 4
- BIO 200 - Biology of Organisms Credits: 4
- BMB 322 - Biochemistry Credits: 3
- BMB 323 - Biochemistry Laboratory Credits: 2
- CHY 121 - Introduction to Chemistry Credits: 3
- CHY 122 - The Molecular Basis of Chemical Change Credits: 3
- CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- CHY 124 - The Molecular Basis of Chemical Change Laboratory Credits: 1
- CHY 251 - Organic Chemistry I Credits: 3
- CHY 252 - Organic Chemistry II Credits: 3
- CHY 253 - Organic Chemistry Laboratory I Credits: 2
- CHY 254 - Organic Chemistry Laboratory II Credits: 2
- INT 200 - (SBE) Orientation to Health Professions Credits: 4  
(This course is recommended but is not required for the minor)
- MAT 126 - Calculus I Credits: 4
- PHY 111 - General Physics I Credits: 4  
and
- PHY 112 - General Physics II Credits: 4  
or
- PHY 121 - Physics for Engineers and Physical Scientists I Credits: 4  
and
- PHY 122 - Physics for Engineers and Physical Scientists II Credits: 4

## Minor: Renewable Energy Economics and Policy

## **OVERVIEW OF DEGREE REQUIREMENTS**

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** 2.0

**Minimum Grade requirements for courses to count toward minor:** None.

**Contact Information:** Karen Moffet, School of Economics, 206 Winslow Hall, 581-3154

The Renewable Energy Economics and Policy minor provides students an introduction to the wide-ranging issues concerning the production, distribution, consumption, and impacts of energy. This program complements degree programs in the social sciences and humanities. At minimum, the minor includes 18 credit hours of coursework, 9 of which are required core courses.

### **Core Courses: (9 Credits)**

- ECO 381 - Sustainable Development Principles and Policy Credits: 3
- ECO 405 - Sustainable Energy Economics & Policy Credits: 3
- EES 324 - Environmental Protection Law and Policy Credits: 3

### **Elective Courses: (9 credits)**

- ECO 180 - Citizens, Energy & Sustainability Credits: 3
- EET 498 - Selected Topics in Electrical Engineering Technology Credits: 1-4
- ERS 191 - Energy in the Earth System Credits: 3
- ERS 369 - Energy Resources and Climate Change Credits: 3
- PHI 232 - Environmental Ethics Credits: 3
- **or**
- PHI 432 - Environmental Philosophy and Policy Credits: 3
- SFR 455 - Bioenergy Sources, Systems and Environmental Effects Credits: 3
- Other courses with permission

## **Minor: Renewable Energy Science and Technology**

### **OVERVIEW OF DEGREE REQUIREMENTS**

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** 2.0

**Minimum Grade requirements for courses to count toward minor:** None.



**Contact Information:** David Dvorak, Prof. of Mechanical Engineering Technology, 119 Boardman Hall

The Renewable Energy Science and Technology Minor provides students an introduction to the wide-ranging issues concerning the production, distribution, consumption, and impacts of energy. This program complements degree programs in engineering and engineering technology, as well as those in the physical, life, and social sciences. The minor includes 18 credit hours of coursework, 9 hours of which are required courses.

### Core Courses: (9 Credits)

- ECO 405 - Sustainable Energy Economics & Policy Credits: 3
- EET 498 - Selected Topics in Electrical Engineering Technology Credits: 1-4  
Topic: Renewable Energy and Electricity Production
- SFR 455 - Bioenergy Sources, Systems and Environmental Effects Credits: 3

### Elective Courses: (9 credits)

- CHE 461 - Combustion and Fuel Processing Credits: 3
- ECO 180 - Citizens, Energy & Sustainability Credits: 3
- EES 450 - Principles of Environmental Science Credits: 3
- ERS 191 - Energy in the Earth System Credits: 3
- ERS 369 - Energy Resources and Climate Change Credits: 3
- MET 391 - Heating, Ventilating and Air Conditioning Credits: 3
- MEE 475 - Fuel Cell Science and Technology Credits: 3
- or
- MET 475 - Fuel Cell Science and Technology Credits: 3
- Thermodynamics (MEE 230, MET 236, MET 433, CHE 385, or PHY 462)
- Electric Power (EET 323, ECE 427, or ECE 498 Topic: Electrical Circuits, Power, and Machinery)
- Other courses with permission

## Minor: Resource and Agribusiness Management

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** None.

**Minimum Grade requirements for courses to count toward minor:** None.

**Contact Information:** Mario Teisl, Director, School of Economics, 206 Winslow Hall, (207) 581-3162.

Other courses may be substituted with the consent of the student's advisor and ECO Undergraduate Coordinator.

## Courses:

- ECO 120 - Principles of Microeconomics Credits: 3
- ECO 254 - Small Business Economics and Management Credits: 3
- ECO 350 - Intermediate Microeconomic Theory Credits: 3
- ECO 366 - Applied Economic Data Analysis Credits: 3
- **or**
- ECO 488 - Spreadsheet Modeling and Decision Analysis Credits: 3

## Plus two courses selected from the following:

- ECO 377 - Introduction to Natural Resource Economics and Policy Credits: 3
- **or**
- ECO 477 - Economics of Environmental and Resource Management Credits: 3
  
- ECO 381 - Sustainable Development Principles and Policy Credits: 3
- EES 324 - Environmental Protection Law and Policy Credits: 3

## Minor: Soil Science

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 21

**GPA requirements to earn minor:** 2.0

**Minimum Grade requirements for courses to count toward minor:** None.

**Contact Information:** Ivan Fernandez, School of Forest Resources, Professor of Soil Science, Cooperating Professor, Climate Change Institute and School of Food and Agriculture, 1 Deering Hall, 207-581-2932, ivanjf@maine.edu

This minor is designed to provide students with a basic understanding of soil science that goes beyond the basic soil science course required for most natural resource and environmental science disciplines. The focus of the minor is to add depth to the student's understanding of the role of soils in supporting ecosystem services essential for society and the sustainability of our planet. The required courses build depth in the physical, biological and chemical form and function of soils, and elective courses allow the student to design their soil science minor curriculum to best address their disciplinary interests. It can be useful across a range of natural resource sectors including agriculture, horticulture, forestry, wetland ecology, and environmental science.

Please Note:

- PSE440 - Environmental Soil Chemistry and Plant Nutrition is offered Spring - even years.
- PSE442 - Pedology: The Science of Soil Morphology, Genesis and Classification is offered Fall - even years.
- PSE444 - Field Soil Morphology and Classification Techniques is offered Fall - even years and serves as a Co-requisite for PSE442.

## Required Courses:

- EES 140 - Soil Science Credits: 3
- EES 141 - Soil Science Laboratory Credits: 1
- PSE 440 - Environmental Soil Chemistry and Plant Nutrition Credits: 3
- PSE 469 - Soil Microbiology Credits: 3

## Plus three from the following list:

- ERS 330 - Mineralogy Credits: 4
- ERS 441 - Glaciers and Our Landscape Credits: 3
- PSE 320 - Soil Organic Matter Management Credits: 3
- PSE 442 - Pedology: The Science of Soil Morphology, Genesis and Classification Credits: 3
- PSE 444 - Field Soil Morphology and Classification Techniques Credits: 1
- WLE 413 - Wetland Delineation and Mapping Credits: 4
- WLE 423 - Wetland Ecology and Conservation Credits: 4

\*Additional options for classes are possible with approval by minor advisor.

## Minor: Sustainable Agriculture

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor: 21**

**GPA requirements to earn minor: 2.0**

**Minimum Grade requirements for courses to count toward minor: None.**

**Contact Information:** Mary Fernandez, Student Academic Services Coordinator, 201A Rogers Hall, (207) 581-2938, mary.fernandez@umit.maine.edu

This minor gives students a broad overview of the many areas that are encompassed by plant sciences. It includes several lab classes which allow hands-on experience in the identification, production and anatomical study of a wide-range of herbaceous and woody plants. The required courses cover both basic and applied sciences. Elective courses allow the individual to choose from courses focusing on plants in natural ecosystems, in the managed ecosystems of farms, greenhouses and nurseries, or in the laboratory.

**Please note:**

- The following courses are not acceptable course choices for Environmental Horticulture majors: PSE 403 and PSE 415.
- PSE 101 - Cropping Systems is offered Spring - even years.

## Required Courses:

- EES 140 - Soil Science Credits: 3
- EES 141 - Soil Science Laboratory Credits: 1
- PSE 100 - Plant Science Credits: 4
- PSE 101 - Cropping Systems Credits: 4
- PSE 105 - Principles of Sustainable Agriculture Credits: 3

## Plus two from the following list:

- PSE 203 - Weed Biology and Identification Credits: 3
- PSE 312 - Sustainable Food Systems: Challenges and Opportunities Credits: 3
- PSE 320 - Soil Organic Matter Management Credits: 3
- PSE 403 - Weed Ecology and Management Credits: 3
- PSE 415 - Greenhouse Management Credits: 4

## Minor: Sustainable Food Systems

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** 2.0

**Minimum Grade requirements for courses to count toward minor:** None.

**Contact Information:** Mary Fernandez, Student Academic Services Coordinator, 201A Rogers Hall, 207-581-2938, mary.fernandez@umit.maine.edu

This minor provides students with an understanding of the sustainability of U.S. and global food systems, including factors such as production, processing, safety, distribution, and consumption of food. It complements degree programs in natural and social science, as well as business.

**Please note:**

- This minor is not an option for Sustainable Agriculture majors.
- No more than 9 total credits may be from 100-level classes.

- PSE 105 is a prerequisite for PSE 312.

## Required Courses:

- FSN 101 - Introduction to Food and Nutrition Credits: 3
- PSE 105 - Principles of Sustainable Agriculture Credits: 3
- PSE 312 - Sustainable Food Systems: Challenges and Opportunities Credits: 3

## Plus 9 credits from the following list:

- ECO 190 - World Food Supply, Population and the Environment Credits: 3
- FSN 270 - World Food and Nutrition Credits: 3
- FSN 330 - Introduction to Food Science Credits: 3
- FSN 436 - Food Law Credits: 3
- FSN 440 - Utilization of Aquatic Food Resources Credits: 3
- FSN 450 - Food Biotechnology Credits: 3
- PAX 370 - Building Sustainable Communities Credits: 3
- PSE 101 - Cropping Systems Credits: 4
- PSE 320 - Soil Organic Matter Management Credits: 3

## Minor: Zoology

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor: 22**

**GPA requirements to earn minor:** Zoology minors require a cumulative 2.0 GPA in all courses taken in the minor.

**Minimum Grade requirements for courses to count toward minor:** Zoology minors must have a "C" or better in BIO 100 and BIO 200.

**Contact Information:** Amy Dieffenbacher-Krall, Assistant Director of School of Biology and Ecology, 100 Murray Hall, (207)581-2510, annd@maine.edu

The minor in Zoology is designed for students in other fields who would like to develop a basic understanding of modern animal biology. The minor is not open to students majoring or minoring in Biology or Botany. The requirements for the minor in Zoology include the courses listed below. Students must obtain a minimum grade of C in BIO 100 and BIO 200 and a minimum GPA for the minor of 2.0.

## Courses:

- BIO 100 - Basic Biology Credits: 4
- BIO 200 - Biology of Organisms Credits: 4
- Any courses, at least three of which must be animal courses (A), from Biological Sciences Areas I-V in Zoology B.A. and B.S. programs<sup>1,2</sup> Credits: 14

<sup>1</sup>Students majoring in Biochemistry, Microbiology, or Molecular and Cellular Biology must choose courses that are not BMB courses.

<sup>2</sup>Students majoring in Animal and Veterinary Sciences, Ecology and Environmental Sciences, Marine Science, or Wildlife Ecology must choose courses from Areas I-V that are not on the list of courses that count towards their major.

# Division of Lifelong Learning

The Division of Lifelong Learning provides lifelong learning opportunities that reflect the University's outreach mission and land-grant heritage by offering instructional delivery systems tailored for external constituents, such as off-campus or after hours live instruction; web-based courses; interactive television and video conferencing; computer conferencing and other forms of electronic instruction. The Division provides a broad range of programs and services to meet the needs of degree seeking professionals, and adult learners as well as students through the University of Maine System and selected students in Maine high schools qualified to take college classes. It serves matriculated degree candidates, students with time conflicts between classes and other responsibilities, multi-campus students, and adults considering a return to pursue a college degree, and it provides an important link between the University of Maine and Maine's citizens and workers. Established in 1996, the Division is composed of Bureau of Labor Education, Conference Services, Continuing and Online Education, the Diversity Leadership Institute, the Hutchinson Center, Maine Studies, Peace and Reconciliation Studies, Summer University and Winter Sessions, and the Women's Resource Center. For further information: [dll.umaine.edu/](http://dll.umaine.edu/) or call (207) 581-3113.

## **ACADEMIC PROGRAMS:**

- Bachelor of University Studies
- Minor in Labor Studies
- Minor in Maine Studies
- Minor in Peace and Reconciliation Studies
- Certificate in Classical Studies
- Certificate in Environmental Horticulture Studies
- Certificate in Equine Studies
- Certificate in Maine Studies
- Certificate in Peace and Reconciliation Studies
- Certificate in Studies in Accounting

## **Bureau of Labor Education**

The Bureau of Labor Education (BLE), established in 1966 by the 102nd Maine Legislature and the Trustees of the University of Maine, is guided by the principle that education is a necessary and vital component of a democratic society, as well as a lifelong process. The BLE conducts educational programs, presentations, and research on labor and labor-related issues of interest to workers, students, educators, leaders and staff of union organizations, and public policy makers, and through the publication of briefing papers, the Bureau analyzes important public policy issues. Through teaching, research and public service, the Bureau helps Maine workers and others assess their own situation in relation to the global, economic, political and social environment. The BLE offers labor studies courses entitled: LST 101 - Introduction to Labor Studies and LST 201 - Work and Labor in a Global Environment. For further information: [dll.umaine.edu/ble](http://dll.umaine.edu/ble) or call (207) 581-4124.

## **Conference Services**

Conference Services furthers the academic mission of the University of Maine by bringing together participant groups and qualified resource people to share information and ideas, identify best practices, develop new skills and insights, and to find solutions to current problems. It accomplishes this by professionally coordinating a rich and diverse selection of conferences, meetings, seminars and symposia annually, thereby showcasing the University's facilities and resources through its research, and educational endeavors. Conference Services is responsible for the administration of CEUs for all externally initiated non-credit programs. For further information: [www.umaine.edu/conferences](http://www.umaine.edu/conferences) or call (207) 581-4092.

## **University of Maine Hutchinson Center**

The Hutchinson Center, located in Belfast, one hour south of the University of Maine's Orono campus, provides educational opportunities including access to courses that meet UMaine general education requirements, bachelor's degrees and graduate degrees. Credit and non-credit courses are delivered live, online or via videoconference technology. A state-of-the art

telecommunications facility, with high tech biology and chemistry labs, art studio, and air-conditioned classrooms, the Hutchinson Center also hosts many community conferences and meetings.

For further information: The Hutchinson Center, 80 Belmont Avenue, Belfast ME 04914, (207) 338-8000/1-800-753-9044, Fax: (207)338-8031 or on the web at [www.hutchinsoncenter.umaine.edu](http://www.hutchinsoncenter.umaine.edu).

### **Women's Resource Center**

The Women's Resource Center (WRC) promotes and maintains a close relationship between the women on the University of Maine campus and women in the larger Maine community. Located at 102 Fernald Hall, the WRC works with women of all ages. WRC offers mentoring opportunities with women activists; organizes initiatives to support economic equity for women including support for women in underrepresented career fields; gender equity programs for college students, staff, pre-college girls and educators; and organizes education and action to support reproductive rights. Leadership, skill development and research opportunities are available to University of Maine undergraduate and graduate students through the WRC. The Center serves as a resource for individuals and organizations, offering information and referrals for women's programs and services, on and off campus in order to create a broader understanding of the diverse experiences of all women. The Center provides an accessible meeting space for small groups, collaboration with the Student Women's Association, and information about events of interest to women. For more information: [www.wrc.umaine.edu/](http://www.wrc.umaine.edu/) or call (207) 581-1508.

### **University of Maine Diversity Leadership Institute (UMDLI)**

Established in 2004, as a program of the Division of Lifelong Learning, the UMDLI offers opportunities for members to participate in diversity leadership education that provides personal growth and prepares them to act as social change agents for the campus and their communities. The program examines the concepts of discrimination, racism, privilege, prejudice, and stereotyping; allows participants to assess their perceptions about themselves and others with regard to differences; and explores the importance of diversity on campus; looks at how diversity enhances the environment; provides participants with skills to assist in developing and enhancing student, faculty, and staff awareness of racial, ethnic and cultural issues in higher education; and provides the structure to build and nurture ongoing relationships, dialogues, and support systems through an active, growing alumni/alumnae group (alums) that is a catalyst for influencing campus decision-making and goal setting. For more information: contact [devon@maine.edu](mailto:devon@maine.edu) or visit [umaine.edu/umdl/](http://umaine.edu/umdl/)

## **Major**

## **University Studies**

### **OVERVIEW OF DEGREE REQUIREMENTS**

**Minimum number of credits required to graduate:** 120 (30 credits are required for the major)

**Minimum Grade requirements for courses to count toward major:** C or better

**GPA requirements to graduate:** 2.0

**Required Course(s) for fulfilling Capstone Experience:** UST 499

**Contact Information:** Barbara Howard, Director, 122 Chadbourne Hall, (207)581-3143; [howard@maine.edu](mailto:howard@maine.edu)

The Bachelor of University Studies (B.U.S.) is UMaine's degree completion program for busy adults. Many adults who have some higher-education experience but no bachelor's degree find that life circumstances or interests make a traditional major



and/or on-campus study difficult. Often family, job, and other responsibilities do not allow for full-time study. For these students, the B.U.S. program provides an excellent opportunity to develop a program of study that encompasses their interests and makes maximum use of their existing transfer credits. The program is also available in a part-time, online format to accommodate the needs of working adults.

The B.U.S. curriculum can be totally self-designed, or students may select one of four existing tracks (24 credit hours). The B.U.S. program offers the following track options:

- Self-Designed Track
- Labor Studies Track
- Leadership Studies Track
- Maine Studies Track
- Peace and Reconciliation Studies Track.

With its multiple track options, the B.U.S. program provides an opportunity both for students who would benefit from an individually-designed interdisciplinary program of study, as well as for students who would prefer a more prescribed curriculum.

Admission to the B.U.S. program is offered to adults with at least 18 college credits from regionally accredited institutions with a grade point average of C or better who wish to develop a flexible and accessible degree program to advance their goals. Potential candidates are encouraged to discuss with the program director how their educational background may be evaluated through transfer evaluation and the Prior Learning Assessment policy of the University. After they confirm their admission to the degree program, students with relevant prior learning experience will be connected with appropriate evaluators, and discuss the possibility of converting such experience to college credit.

In their first semester, B.U.S. students take a required (on-line) one credit course-UST 100: Introduction to University Studies-in which they have a chance to explore their goals, refresh their knowledge about essential resources and college success skills, explore the UM curriculum, and draft a proposed plan of study, either self-designed using existing UMaine courses or with one of the existing tracks listed above.

Students work with an advisor to articulate their goals leading to specific educational outcomes that will work well with their current life circumstances. Maintenance of a 2.0 GPA is required to remain in good standing as a degree candidate. Students suspended from degree candidacy for failing to complete an approved plan (Self-Designed Track students) or falling below the required grade point average may be reinstated to degree candidacy after one semester upon approval of a plan and improved academic standing, as long as they meet all other requirements.

For an appointment or for further information, call (207) 581-3143 or visit the web page at <http://umaine.edu/universitystudies>

## Required courses:

- UST 100 - Introduction to the Bachelor of University Studies Credits: 1  
Offered in an on-line, six-week format.
- UST 300 - Core Course in University Studies Credits: 3  
(Meets upper level Writing Intensive requirement in the major)
- UST 499 - Senior Capstone Credits: 3  
(meets General Education Capstone requirement)

## Optional General Education Core Sequence (recommended):

- UST 200 - Crucial Question 1. Defining Human: What does it mean to be human? : Who are we? How do we know?  
Credits: 3

- UST 210 - Crucial Question 2: Explorations & Encounters: What is the World (and how do we know it?) Credits: 3
- UST 310 - Crucial Questions 3: Self and Others Credits: 3
- UST 320 - Crucial Questions 4: Human Futures Credits: 3
- Each Crucial Questions course is offered in an on-line semester format for 3 credits. Taken together, the 12 credits will satisfy University General Education credits the majority of Human Values and Social Context, Ethics, and Writing Intensive requirements. See B.U.S. website for complete information.

## CLAS Pathway

Bachelor of University Studies, CLAS Pathway information regarding this pathway is located under the College of Liberal Arts and Sciences

## Self-Designed Track

The Bachelor of University Studies Self-Designed Track provides an opportunity for students to benefit from a custom tailored, interdisciplinary program of study. Many students with interests in an interdisciplinary approach to professional, personal, or civic goals are looking for a focus that encourages them to develop a program of study that encompasses their interests. B.U.S. students in the individualized track have the option to pursue an academic minor in a variety of academic subjects.

Self-Designed Tracks must be approved by an interdisciplinary faculty committee. Approval of the plan within two semesters of admission and maintenance of a 2.0 GPA is required to remain in good standing as a degree candidate.

## Labor Studies Track (24 credits)\*

The Labor Studies Track (24 credit hours) is structured to be taught online with a focus on creating dialog with students about the theories, ideologies, and beliefs that support, and are interwoven within the framework of, the labor movement and the practical skills involved in running labor organizations and representing employees. Students develop an understanding of these foundational pieces and build upon them using an interdisciplinary approach.

Faculty Coordinator: Marc Cryer

## Required Courses (6 credits)

- LST 101 - Introduction to Labor Studies Credits: 3
- LST 201 - Work and Labor in a Global Economy Credits: 3

## At least one of the following (3 credits)

- BUA 331 - Labor-Management Relations Credits: 3
- HTY 477 - The American Worker Credits: 3
- PAX 360 - Conflict Resolution: A Relational Approach To Working Through Conflict Credits: 3
- PAX 451 - Mediation: Its Premises, Practices and Policies Credits: 3
- SOC 201 - Social Inequality Credits: 3
- WGS 201 - Topics in Women's, Gender, and Sexuality Studies Credits: 3

## Electives (15 credits - select 5 courses from the list below)

- CMJ 257 - Business and Professional Communication Credits: 3
  - CMJ 367 - Public Relations Credits: 3
  - ECO 120 - Principles of Microeconomics Credits: 3
  - ECO 121 - Principles of Macroeconomics Credits: 3
  - ECO 471 - Public Finance and Fiscal Policy Credits: 3
  - ENG 212 - Persuasive and Analytical Writing Credits: 3
  - HTY 104 - United States History II Credits: 3
  - HTY 241 - History of Globalization, 1900-Present Credits: 3
  - HTY 330 - Robber Barons, Reformers and Radicals 1877-1914 Credits: 3
  - HTY 467 - Early 20th Century America, 1914-1945 Credits: 3
  - HTY 468 - America Since 1945 Credits: 3
  - HTY 492 - Technology and Society Since 1800 Credits: 3
  - HTY 494 - Women, History and American Society: Selected Topics Credits: 3
  - PHI 233 - Business Ethics Credits: 3
  - PHI 240 - Social and Political Philosophy Credits: 3
  - PHI 342 - Marxist Philosophy I: The Philosophy of Karl Marx Credits: 3
  - PHI 344 - Theories of Justice Credits: 3
  - PHI 345 - Global Justice Credits: 3
  - POS 120 - Introduction to World Politics Credits: 3
  - POS 203 - American State and Local Government Credits: 3
  - POS 357 - Film and Politics Credits: 3
  - POS 362 - Maine Government Credits: 3
  - POS 363 - Urban Government and Politics Credits: 3
  - POS 380 - Interest Groups and American Politics Credits: 3
  - POS 381 - Political Parties and Elections Credits: 3
  - POS 385 - Women and Politics Credits: 3
  - POS 453 - Political Behavior and Participation Credits: 3
  - SOC 302 - Macrosociology: The Structure of Societies Credits: 3
  - SWK 330 - Contemporary Issues in Diversity and Pluralism Credits: 3
  - WGS 101 - Women's, Gender and Sexuality Studies Credits: 3
- \*Students must also complete BUS program requirements, university general education requirements, and all other UMaine graduation requirements.

## Leadership Studies Track (24 credits)\*

The interdisciplinary Leadership Studies Track consists of 24 credit hours and provides students with in-depth knowledge of leadership theory, ethics, skills, and context-based issues, as well as practical, experiential training applicable to nearly any area of study or social setting. The track prepares students for diverse, real-life experiences as citizen leaders in local, state, national, and global communities.

Faculty Coordinator: Richard Powell

## Required Courses (12 credits)

- LDR 100 - Foundations of Leadership Credits: 3
- LDR 200 - Leadership Ethics Credits: 3
- LDR 300 - Advanced Leadership Theory and Practice Credits: 3
- LDR 499 - Leadership Engagement Practicum Credits: 3

## Leadership Behavior and Skills Elective (3 credits)

Select one course from the following list:

- CMJ 102 - Fundamentals of Interpersonal Communication Credits: 3
- CMJ 103 - Fundamentals of Public Communication Credits: 3
- CMJ 345 - Small Group Communication: Service-Learning Credits: 3
- CMJ 347 - Argument and Critical Thinking Credits: 3
- CMJ 360 - Nonverbal Communication Credits: 3
- CMJ 367 - Public Relations Credits: 3
- CMJ 370 - Visual Communication Credits: 3
- ENG 317 - Business and Technical Writing Credits: 3
- ENG 415 - Advanced Report & Proposal Writing Credits: 3
- ENG 418 - Topics in Professional Writing Credits: 3
- INV 180 - Create: Innovation Engineering I Credits: 3
- INV 282 - Communicate: Innovation Engineering II Credits: 3
- MSL 401 - Mission Command and the Army Profession Credits: 4
- NAV 303 - Leadership and Management Credits: 3
- PAX 360 - Conflict Resolution: A Relational Approach To Working Through Conflict Credits: 3
- PAX 451 - Mediation: Its Premises, Practices and Policies Credits: 3
- PAX 470 - Sustainable Communication: The Theory and Practice of Nonviolent Communication Credits: 3

## Leadership in Communities/Groups/Orgs Elective (9 credits)

Select three courses from the following list:

- LDR 350 - Topics in Leadership Studies Credits: 3
- ANT 270 - Environmental Justice Movements in the United States Credits: 3
- ANT 470 - Religion and Politics Credits: 3
- BUA 270 - Marketing Credits: 3
- BUA 325 - Principles of Management and Organization Credits: 3
- BUA 327 - Business and Society Credits: 3
- CHF 201 - Introduction to Child Development Credits: 3
- CLA 400 - Hero: Myth and Meaning Credits: 3
- CMJ 225 - Sex, Gender and Communication Credits: 3
- CMJ 403 - Persuasion and Social Influence Credits: 3
- CMJ 405 - Women and Communication Credits: 3
- CMJ 420 - Health Communication Credits: 3
- CMJ 430 - Intercultural Communication Credits: 3
- CMJ 470 - Communication in Organizations Credits: 3

- ECO 254 - Small Business Economics and Management Credits: 3
- EHD 202 - Education in a Multicultural Society Credits: 3
- EHD 203 - Educational Psychology Credits: 3
- ENG 253 - Shakespeare: Selected Plays Credits: 3
- HON 170 - Currents and Context Credits: 1
- HON 308 - Visiting Scholar in Ethics Tutorial Credits: 3
- HTY 279 - European Military History Credits: 3
- HTY 401 - History of Greece Credits: 3
- HTY 402 - Roman History Credits: 3
- INV 401 - Systems: Innovation Engineering IV Credits: 3
- KPE 209 - Wilderness First Responder Credits: 3
- KPE 286 - Challenge Course Facilitator Skills Credits: 3
- KPE 287 - Ropes Course Management Credits: 1
- KPE 311 - Maine Wilderness Guide Credits: 3
- KPE 344 - Principles of Coaching Credits: 3
- MES 301 - Rachel Carson, Maine, and the Environment Credits: 3
- MSL 301 - Adaptive Team Leadership Credits: 3
- MSL 302 - Applied Team Leadership Credits: 3
- MSL 350 - The Evolution of American Warfare Credits: 3
- MSL 402 - Mission Command and the Company Grade Officer Credits: 4
- NAV 303 - Leadership and Management Credits: 3
- NAV 304 - Leadership and Ethics Credits: 3
- NUR 409 - Professional Issues: Leadership and Organization Credits: 3
- NUR 453 - Community Nursing Care Management Credits: 2
- NUR 454 - Clinical Adult Nursing Management Credits: 2
- PAX 290 - Nonviolence: Perceptions and Perspectives Credits: 3
- PAX 370 - Building Sustainable Communities Credits: 3
- PAX 400 - Martin Luther King and the Promise of Social Renewal Credits: 3
- PAX 401 - Women Social Activists: Warriors for Peace and Justice Credits: 3
- PHI 230 - Ethics Credits: 3
- PHI 231 - Topics in Applied Ethics Credits: 3
- PHI 232 - Environmental Ethics Credits: 3
- PHI 233 - Business Ethics Credits: 3
- PHI 235 - Biomedical Ethics Credits: 3
- PHI 236 - Feminist Ethical, Social and Political Theory Credits: 3
- PHI 240 - Social and Political Philosophy Credits: 3
- PHI 344 - Theories of Justice Credits: 3
- PHI 345 - Global Justice Credits: 3
- PHI 346 - The Philosophy of Mahatma Gandhi Credits: 3
- PHI 432 - Environmental Philosophy and Policy Credits: 3
- POS 301 - Classical Political Thought Credits: 3
- POS 302 - Medieval Political Thought Credits: 3
- POS 303 - Early Modern Political Thought Credits: 3
- POS 304 - American Political Thought Credits: 3
- POS 305 - Late Modern Political Thought Credits: 3
- POS 306 - Crafting the American Constitution Credits: 3
- POS 307 - Democratic Theory Credits: 3

- POS 353 - The U.S. Congress Credits: 3
- POS 354 - The U.S. Presidency Credits: 3
- POS 357 - Film and Politics Credits: 3
- POS 385 - Women and Politics Credits: 3
- POS 386 - Religion and Politics in the United States Credits: 3
- POS 474 - Conduct of Foreign Policy Credits: 3
- POS 475 - International Security Credits: 3
- POS 486 - Religious Thought, the American Identity, and U.S. Public Policy Credits: 3
- PSY 230 - Social Psychology Credits: 3
- PSY 251 - Psychology of Motivation Credits: 3
- PSY 423 - The Psychology of Parenting Credits: 3
- SFR 106 - Forest Land Navigation and Outdoor Preparedness Credits: 1
- SOC 201 - Social Inequality Credits: 3
- SOC 202 - Social Problems Credits: 3
- SOC 301 - Microsociology: Interaction and the Self Credits: 3
- SOC 329 - Sociology of Gender Credits: 3
- SOC 482 - The Sociology of Religion Credits: 3
- SWK 330 - Contemporary Issues in Diversity and Pluralism Credits: 3
- SWK 350 - Human Behavior and the Social Environment I Credits: 3
- SWK 351 - Human Behavior in the Social Environment II Credits: 3
- SWK 440 - Social Welfare Policy and Issues Credits: 3
- THE 466 - Stage Directing Credits: 3
- WGS 201 - Topics in Women's, Gender, and Sexuality Studies Credits: 3
- WGS 230 - Women, Health, and the Environment Credits: 3
- WGS 301 - Intermediate Topics in Women's, Gender, and Sexuality Studies Credits: 3
- WGS 340 - Transnational Feminisms Credits: 3

## Maine Studies Track (24 credits)\*

The Maine Studies Track (24 credit hours) offers students the opportunity to pursue the study of Maine through courses in history, literature, women's studies, and Native-American studies. The program recognizes the value of interdisciplinary and multidisciplinary approaches to understanding historical and contemporary issues such as developing Maine's economy, protecting its environment, and appreciating the cultures of the state's diverse population.

### Required Courses (9 credits):

- HTY 210 - History of Maine Credits: 3
- MES 101 - Introduction to Maine Studies Credits: 3
- MES 201 - The Maine Coast Credits: 3

### Electives

15 credits- select 5 courses from the list below:

- ANT 426 - Native American Folklore Credits: 3
- ENG 244 - Writers of Maine Credits: 3

- ENG 429 - Topics in Literature and Language Credits: 3
- ERS 102 - Environmental Geology of Maine Credits: 4
- ERS 209 - Geology of Maine Credits: 3
- FAS 101 - Introduction to Franco American Studies Credits: 3
- FAS 200 - Primary Sources in Franco American Studies Credits: 3
- FAS 240 - French Exploration and Settlement of Maine, 1604-1760 Credits: 3
- GEO 212 - Geography of Maine Credits: 3
- or**
- HTY 212 - Geography of Maine Credits: 3
- HTY 211 - Maine and the Sea Credits: 3
- HTY 222 - Maine Indian History in the Twentieth Century Credits: 3
- or**
- NAS 230 - Maine Indian History in the Twentieth Century Credits: 3
- HTY 316 - Shipwreck Sites: Archaeological and Historical Investigations Credits: 3
- HTY 398 - Historical Issues Credits: 3
- INT 491 - (University Wide) A Midwife's Tale and the Social Web Credits: 3
- or**
- WGS 401 - Advanced Topics in Women's, Gender, and Sexuality Studies Credits: 3  
Topic: A Midwife's Tale and the Social Web
- MES 301 - Rachel Carson, Maine, and the Environment Credits: 3
- MES 498 - Advanced Topics in Maine Studies Credits: 1-3
- NAS 102 - Introduction to Wabanaki Culture, History and Contemporary Issues Credits: 3
- NAS 401 - Advanced Topics in Native American Studies Credits: 3
- POS 203 - American State and Local Government Credits: 3
- WGS 201 - Topics in Women's, Gender, and Sexuality Studies Credits: 3

\*Students must also complete BUS program requirements, university general education requirements, and all other UMaine graduation requirements.

## Peace and Reconciliation Studies Track (24 credits)\*

The Peace and Reconciliation Studies Track (24 credit hours) focuses on education for peace, justice, human rights, nonviolence, tolerance, global understanding, interdependence and mutuality, and environmental responsibility. Peace Studies' mission is to guide students to an understanding of the underlying spiritual processes involved in the creation of the individual who is a peacemaker and in the creation of a culture of peace. In every age, there have been efforts for the creation of a sustainable peace, including the development of ethics, great literature and art, and the appearance of great figures that have led us forward to this point in human development.

Faculty Coordinator: Barbara Blazej

### Required Courses (9 credits):

- PAX 201 - Introduction to Peace and Reconciliation Studies Credits: 3
- PAX 290 - Nonviolence: Perceptions and Perspectives Credits: 3
- PAX 410 - Theories in Peace and Reconciliation Studies Credits: 3

Electives (15 credits - select 5 courses from the list below)

- PAX 250 - Peace and Pop Culture Credits: 3
  - PAX 260 - Realistic Pacifism Credits: 3
  - PAX 350 - Buddhism, Peace and Contemplative Traditions Credits: 3
  - PAX 351 - This Sacred Earth: Ecology and Spirituality Credits: 3
  - PAX 360 - Conflict Resolution: A Relational Approach To Working Through Conflict Credits: 3
  - PAX 370 - Building Sustainable Communities Credits: 3
  - PAX 380 - Ecovillages and Ecocities: Models of Global Restoration Credits: 3
  - PAX 398 - Topics in Peace and Reconciliation Studies Credits: 3
  - PAX 400 - Martin Luther King and the Promise of Social Renewal Credits: 3
  - PAX 401 - Women Social Activists: Warriors for Peace and Justice Credits: 3
  - PAX 451 - Mediation: Its Premises, Practices and Policies Credits: 3
  - PAX 452 - Advanced Study in Transformative Mediation Credits: 3
  - PAX 491 - Forgiveness: Creating a Culture of Peace and Reconciliation Credits: 3
  - PAX 495 - Advanced Topics in Peace and Reconciliation Studies Credits: 3
  - PAX 498 - Special Projects in Peace and Reconciliation Studies Credits: 1-6
- \*Students must complete all other BUS program requirements, university general education requirements, and all other UMaine graduation requirements.

## Minor

### Minor: Labor Studies

#### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 18

**Minimum Cumulative GPA required to earn minor:** None.

**Minimum Grade requirements for courses to count toward minor:** A grade of C or better in all Labor Studies core courses (LST 101 and LST 201).

**Other GPA requirements to earn minor:** None.

**Contact Information:** Marc T. Cryer, Director, Bureau of Labor Education, Room 202 Chadbourne Hall, (207)581-4126

As the 21st century progresses the rapid pace of changes in technology, productivity, globalization of markets and culture, and the environment are profoundly affecting the jobs, workplaces, and lives of working people. The minor in Labor Studies allows students to pursue an integrated structure of coursework that critically examines changes in the workplace, the U.S. labor movement, and labor issues from a variety of academic disciplines, including labor studies. By utilizing an interdisciplinary approach, areas of study will include: work and labor in the global economy; the history of labor and the labor movement; the role of conflict, power and inequality; employment and labor law; the organization, roles, and functions of unions; collective bargaining, contract maintenance, and labor-management relations; the implications of climate change, ecology and resource depletion for workers and the labor movement; women and work; and the impacts of technology on work, labor and contemporary social issues.

The Minor in Labor Studies will provide important educational and professional development opportunities for students wishing to focus on labor studies; unorganized and organized employees in the public and private sectors; the staff and elected officers of



labor organizations; educators, government officials, and public policy makers. Non-degree students interested in Labor Studies are encouraged to speak with the Director of the Bureau of Labor Education about the Certificate in Labor Studies.

Goals and Learning Outcomes: The goal of this Minor in Labor Studies centers on enabling students to develop greater knowledge and understanding of unions and the labor movement, the social, historical, economic and political contexts of work and the labor movement, future trends and prospects for work and the labor movement, and issues relating to work in a global context. As a result of completing the Minor in Labor Studies, students will:

- develop a greater understanding of the U.S. labor movement and workplace through historical, political, legal, economic, social, and organizational perspectives;
- be able to analyze the changing nature of work and the workplace in the U.S. and global economy;
- gain a greater understanding of the role of gender, race, and class in the workplace and labor movement;
- explore the implications of post-carbon issues and climate change for workers, the economy, and for the labor movement;
- acquire a practical understanding of the roles, structure, and functions of unions, as well as the dynamics of labor relations established through collective bargaining and contract maintenance;
- be able to identify the major trends and leaders in the history of U.S. organized labor;
- have the knowledge of economic concepts, vocabulary, and current events sufficient to read and "understand the financial section of a major U.S. newspaper;
- become familiar with the state and federal laws most commonly cited in employment and labor relations disputes and be able to find these laws on-line or in a library;
- be familiar with the concepts, vocabulary, and processes of alternative dispute resolution as applied in employment and labor relations.

NOTE: All LST courses will be available as distance and/or hybrid courses, combining a distance section with a live class section.

## Curriculum

The Minor in Labor Studies requires a minimum of eighteen credit hours of course study in the labor-related courses listed below. The two Required Core Courses constitute six credit hours; another six credit hours must be taken from Core Electives, and the remaining six credits are to be selected from the list of elective courses. In addition, elective courses must be taken from (at least) two different disciplines.

## Required Core Courses

Required Core Courses will consist of the following two 3-credit courses, for 6 credits:

- LST 101 - Introduction to Labor Studies Credits: 3
- LST 201 - Work and Labor in a Global Economy Credits: 3

## Electives

Electives will consist of at least four courses (in at least two different disciplines) from the following list of course, for a minimum of **12 credits**.

## Core Electives

Each student must take at least two of these courses:

- BUA 331 - Labor-Management Relations Credits: 3
- \* HTY 477 - The American Worker Credits: 3
- PAX 360 - Conflict Resolution: A Relational Approach To Working Through Conflict Credits: 3
- PAX 451 - Mediation: Its Premises, Practices and Policies Credits: 3
- SOC 201 - Social Inequality Credits: 3
- WGS 201 - Topics in Women's, Gender, and Sexuality Studies Credits: 3  
Course Topic: Women and Work  
\*most strongly recommended elective.

## Other Electives

- ECO 120 - Principles of Microeconomics Credits: 3
- ECO 121 - Principles of Macroeconomics Credits: 3
- HTY 241 - History of Globalization, 1900-Present Credits: 3
- HTY 330 - Robber Barons, Reformers and Radicals 1877-1914 Credits: 3
- HTY 467 - Early 20th Century America, 1914-1945 Credits: 3
- HTY 468 - America Since 1945 Credits: 3
- HTY 492 - Technology and Society Since 1800 Credits: 3
- HTY 494 - Women, History and American Society: Selected Topics Credits: 3  
(Women & Work Topic **only**; rarely taught)
- POS 380 - Interest Groups and American Politics Credits: 3
- PHI 233 - Business Ethics Credits: 3
- PHI 342 - Marxist Philosophy I: The Philosophy of Karl Marx Credits: 3
- PHI 344 - Theories of Justice Credits: 3
- SOC 302 - Macrosociology: The Structure of Societies Credits: 3
- WGS 340 - Transnational Feminisms Credits: 3

## Transfer of Elective Courses

A maximum of 9 credits maybe accepted as transfer credits, at the discretion of the director.

## Additional Notes for Elective Courses

1) Students are responsible for taking any necessary prerequisite courses for these electives, OR for requesting a waiver directly from the respective course instructors.

2) Anyone wanting to take or count any other elective labor-related courses towards the Labor Studies Minor Program which are not on this list, or courses from other campuses or institutions, must obtain prior approval in writing from the Director of the Bureau of Labor Education. The Bureau of Labor Education reserves the right to make any

decisions regarding course applicability

## Minor: Maine Studies

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** Cumulative GPA of 2.0 in all Maine-related courses counting towards minor.

**Minimum Grade requirements for courses to count toward minor:** A grade of "C" or better is required in all Maine-related courses counting towards minor.

**Contact Information:** Carol Toner, Maine Studies Program Director, 112A Chadbourne Hall, 581-3147

The Minor in Maine Studies offers students the opportunity to investigate Maine's cultural, historical, and physical landscapes. The program recognizes the value of a multidisciplinary approach to understanding Maine's historical and contemporary issues. The Maine Studies minor is useful for those who plan to work in Maine, especially teachers, social workers, business people, policy makers and government employees. Students interested in a Maine studies minor must take a minimum of 18 credits in Maine-related courses, including MES 101, Introduction to Maine Studies and MES 201, The Maine Coast. A minimum of 12 credit hours must be University of Maine courses. Students may complete the minor through courses on campus or at a distance.

Students interested in the Maine Studies minor should contact the Maine Studies office at 581-3147 or email [carol.toner@umit.maine.edu](mailto:carol.toner@umit.maine.edu)

### Curriculum: Required courses (6 credits)

- MES 101 - Introduction to Maine Studies Credits: 3
- MES 201 - The Maine Coast Credits: 3

Select 12 credits from the following list:

#### Anthropology

- ANT 425 - Recorded Interviewing Techniques and Methods Credits: 3
- ANT 426 - Native American Folklore Credits: 3

#### Art

- ARH 361 - Topics in Art History Credits: 3  
Topic: Art, Maine, and a Sense of Place

## Biology

- BIO 205 - Field Natural History of Maine Credits: 4

## Earth Science (Geology)

- ERS 102 - Environmental Geology of Maine Credits: 4
- ERS 209 - Geology of Maine Credits: 3

## English

- ENG 244 - Writers of Maine Credits: 3
- ENG 429 - Topics in Literature and Language Credits: 3  
Topic: Maine Women Writers

## Franco American Studies

- FAS 101 - Introduction to Franco American Studies Credits: 3
- FAS 230 - Franco American Women's Experience Credits: 3
- FAS 329 - Topics in Franco American Studies Credits: 3  
Topic: Borders and Beyond

## Geography

- GEO 212 - Geography of Maine Credits: 3

## History

- HTY 210 - History of Maine Credits: 3
- HTY 211 - Maine and the Sea Credits: 3
- HTY 316 - Shipwreck Sites: Archaeological and Historical Investigations Credits: 3

## Interdisciplinary Curricula

- INT 491 - (University Wide) A Midwife's Tale and the Social Web Credits: 3

## Maine Studies

- MES 301 Rachel Carson, The Environment, and the Maine Coast Credits: 3

## Native American Studies

- NAS 102 - Introduction to Wabanaki Culture, History and Contemporary Issues Credits: 3
- NAS 401 - Advanced Topics in Native American Studies Credits: 3

## Political Science

- POS 203 - American State and Local Government Credits: 3

## Women's, Gender, and Sexuality Studies

- WGS 201 - Topics in Women's, Gender, and Sexuality Studies Credits: 3  
Topic: Maine Women

## Minor: Peace and Reconciliation Studies

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** 2.0

**Minimum Grade requirements for courses to count toward minor:** C

**Contact Information:** Director of the Peace and Reconciliation Studies Program, 120 Chadbourne Hall, (207)581-2609

The Peace and Reconciliation Studies minor requires a minimum of 18 credits of study: 9 (or more) credits of required PAX courses and 9 (or more) credits of PAX electives. Required courses are listed below. Also available are a variety of unique courses, updated each semester.

Many PAX courses satisfy general education requirements. (See the list on our website). Also available is a Special Projects in Peace and Reconciliation Studies (PAX 498), which offers independent study, research, and written projects in Peace and Reconciliation. The course is conducted under the guidance of a Peace and Reconciliation Studies faculty member.

Enrollment is open to all undergraduate students at the University of Maine and there are no admissions requirements beyond those of the college a student is entering.

Students who wish to enroll in the Peace and Reconciliation Studies minor can read more on our website and can visit the Peace and Reconciliation Studies office, 120 Chadbourne Hall, (207) 581-2609, for assistance or further information.

### Curriculum: Required core courses (9 credits):

- PAX 201 - Introduction to Peace and Reconciliation Studies Credits: 3
- PAX 290 - Nonviolence: Perceptions and Perspectives Credits: 3
- PAX 410 - Theories in Peace and Reconciliation Studies Credits: 3

### Nine credits of PAX courses from the following list:

- PAX 250 - Peace and Pop Culture Credits: 3
- PAX 260 - Realistic Pacifism Credits: 3
- PAX 350 - Buddhism, Peace and Contemplative Traditions Credits: 3
- PAX 351 - This Sacred Earth: Ecology and Spirituality Credits: 3
- PAX 360 - Conflict Resolution: A Relational Approach To Working Through Conflict Credits: 3
- PAX 370 - Building Sustainable Communities Credits: 3
- PAX 380 - Ecovillages and Ecocities: Models of Global Restoration Credits: 3
- PAX 398 - Topics in Peace and Reconciliation Studies Credits: 3
- PAX 400 - Martin Luther King and the Promise of Social Renewal Credits: 3
- PAX 401 - Women Social Activists: Warriors for Peace and Justice Credits: 3
- PAX 451 - Mediation: Its Premises, Practices and Policies Credits: 3
- PAX 452 - Advanced Study in Transformative Mediation Credits: 3
- PAX 470 - Sustainable Communication: The Theory and Practice of Nonviolent Communication Credits: 3
- PAX 491 - Forgiveness: Creating a Culture of Peace and Reconciliation Credits: 3
- PAX 495 - Advanced Topics in Peace and Reconciliation Studies Credits: 3
- PAX 498 - Special Projects in Peace and Reconciliation Studies Credits: 1-6

## Non-Degree Certificates

### Certificate: Classical Studies

## OVERVIEW OF REQUIREMENTS

**Minimum number of credits required to earn certificate:** 18

**Minimum Cumulative GPA required to earn certificate:** None

**Minimum Grade requirements for courses to count toward certificate:** A "C" or better in courses taken for certificate

**Other GPA requirements to earn certificate:** 2.0 minimum for courses taken in the certificate

**Contact Information:** please contact the coordinator in 208 Little Hall, (207) 581-2075.

The classical period in Western history, defined as the period from the Bronze Age to the fall of the Roman Empire in the 5th century CE, comprises the "roots" of modern society. In order to understand where we are and where we are going, it is necessary to know where we have been. European and American literature, philosophy, law, religion, politics, language, and art have all been either directly or indirectly formed in reaction to Classical culture. By examination and study of classical civilization, the student will develop a sense of how the ancients responded to the universal questions of human experience. Through an implicit comparison of the cultures of ancient Greece and Rome to our own, the student will also come to have a fuller understanding of the humanist and cultural impulses which have formed and which continue to form our own experience. This interdisciplinary curriculum is particularly useful to the student with interests in ancient history, philosophy, art history, anthropology, literature and political science.

A minimum of 18 credits or 6 courses is required. There are two tracks - Classical Studies, Ancient Language and Classical Studies. Courses in the Certificate are available online, including all CLA courses and all Latin courses.

### **Classical Studies, Ancient Language:**

Students who elect the language track choose Latin as their ancient language. Students will take two semesters of Latin. The remaining courses will be drawn from courses with a CLA or LAT designator, or from the list of approved courses below. Some of the approved courses are not offered online.

### **Classical Studies:**

Students who choose this track may elect to take all courses in the Classics curriculum (i.e., with a CLA designator) or combine two courses with a CLA designator with the courses listed below.

For more information about Classical Studies, visit the coordinator at 208 Little Hall, phone (207) 581-2075

## Art History Courses

- ARH 155 - Art and Visual Culture in the Ancient and Medieval Worlds Credits: 3
- ARH 251 - Classical Art and Architecture Credits: 3

## Classics Courses (all online)

- CLA 101 - Greek Literature in English Translation Credits: 3

- CLA 102 - Latin Literature in English Translation Credits: 3
- CLA 201 - Women in the Ancient World Credits: 3
- CLA 202 - Mythology of the Ancient Near East, North African and Greece Credits: 3
- CLA 400 - Hero: Myth and Meaning Credits: 3
- CLA 401 - Amazons: Myth and Reality Credits: 3

## English Courses

- ENG 231 - Western Tradition in Literature: Homer Through the Renaissance Credits: 3

## History Courses

- HTY 105 - History of Ancient and Medieval Europe Credits: 3
- HTY 401 - History of Greece Credits: 3
- HTY 402 - Roman History Credits: 3
- HTY 433 - Greek and Roman Mythology Credits: 3

## Latin Courses (all online)

- LAT 101 - Elementary Latin I Credits: 4
- LAT 102 - Elementary Latin II Credits: 4
- LAT 203 - Readings in Latin Literature I Credits: 3
- LAT 204 - Readings in Latin Literature II Credits: 3
- Any 400 level Latin Class (online by request)

## Modern Languages Courses

- MLC 231 - Western Tradition in Literature: Homer Through the Renaissance Credits: 3
- MLC 293 - Study Abroad Credits: 1-6
- Topic: Travels in the Ancient Mediterranean (offered sporadically)

## Philosophy Course



- PHI 210 - History of Ancient Philosophy Credits: 3

## Political Science Course

- POS 301 - Classical Political Thought Credits: 3

# Certificate: Environmental Horticulture Studies

## OVERVIEW OF REQUIREMENTS

**Minimum number of credits required to earn certificate:** 14

**Minimum Cumulative GPA required to earn certificate:** 2.0

**Minimum Grade requirements for courses to count toward certificate:** A "C-" or better is required.

**Other GPA requirements to earn certificate:** None.

**Contact Information:** Mary Fernandez, Student Academic Services Coordinator, 201A Rogers Hall (207) 581-2938, mary.fernandez@umit.maine.edu

The Environmental Horticulture Studies Certificate program at the University of Maine offers students the opportunity to pursue the study of environmental horticulture through a series of Core courses (Plant Materials). In addition to the Core, there are two areas of focus that allow students to specialize in an area of their choice by choosing Plant Production and/or Garden Design.

The market potential for the certificate program is mainly the non-traditional student who is looking for opportunities that would allow them to take specific courses in an area of horticulture. This certificate program is based on the premise that potential students will only take one course per semester. Therefore, the Core can be finished in five sequential semesters. The Core program will begin in the Fall semester with PSE100; Plant Science.

The two areas of focus can be started upon completion of the Core.

## Program Requirement:

A grade of C- or better is required.

## Plant Materials - the CORE (14 Credits)

- PSE 100 - Plant Science Credits: 4
- PSE 110 - Introduction to Horticulture and Green Design Credits: 3
- PSE 219 - SL: Herbaceous Landscape Plants Credits: 3
- PSE 221 - Woody Landscape Plants Credits: 4

## Focus in Plant Production (25 credits)

The CORE plus (11 cr.)

- PSE 410 - Plant Propagation Credits: 4
- PSE 415 - Greenhouse Management Credits: 4
- PSE 424 - Nursery Management Credits: 3

## Focus in Garden Design (22 credits)

The CORE plus (8 cr.)

- PSE 227 - Landscape Design and Construction Techniques Credits: 4
- PSE 328 - Landscape Design Credits: 4

# Certificate: Equine Studies

### OVERVIEW OF REQUIREMENTS

**Minimum number of credits required to earn certificate:** 12

**Minimum Cumulative GPA required to earn certificate:** 2.5

**Minimum Grade requirements for courses to count toward certificate:** None.

**Other GPA requirements to earn certificate:** None.

**Contact Information:** Robert Causey, Associate Professor of Animal and Veterinary Sciences, 344 Hitchner Hall, (207) 581-2782, robert.causey@umit.maine.edu

The Certificate in Equine Studies is designed for individuals from various backgrounds who wish to improve their knowledge of equine management and reproduction. The program is designed to cater to the needs of each individual, from beginners with no horse experience, to equine professionals who wish to strengthen their equine credentials.

Currently there is no program providing further education about equine management and reproduction available to the horse-owning public in Maine. As a result of this lack of information, horses, and their owners, frequently suffer unnecessary economic and physical hardship. The University of Maine now has the expertise available to correct this deficiency by offering this Certificate in Equine Studies through Animal and Veterinary Sciences and the Division of Lifelong Learning.

## Requirements for completion of the Certificate:

The student must complete 12 or more credits from this list:

- AVS 203 - Equine Management Credits: 3
- AVS 243 - Centered Riding Principles of Equitation Credits: 3

- AVS 253 - Principles of Western Riding Credits: 3
- AVS 333 - Introduction to Natural Horse Training Credits: 3
- AVS 353 - Equine Reproduction and Breeding Management Credits: 3
- AVS 393 - Training the Standardbred Horse Credits: 3
- AVS 397 - Equine Internship Credits: 1-4
- AVS 433 - Equine Exercise Physiology Credits: 3

## Certificate: Innovation Engineering

### **Innovation Engineering Undergraduate Certificate (12 credit hours)**

Innovation Engineering courses give students a complete array of tools and a systematic approach to creating, communicating and commercializing ideas in response to problems and opportunities in any field; they also learn how to lead the process of innovating within organizations -- businesses, nonprofits, governments, educational institutions, arts organizations, etc.

#### **Educational Objectives:**

The coursework is designed to be ancillary to major work in a specific discipline or central passion. The objective of the Certificate in Innovation Engineering is to give students the skills and confidence to create meaningfully unique solutions to problems in their chosen fields, to communicate the benefits of their innovations and to test and realize their innovative ideas. The course sequence achieves these objectives by teaching the fundamentals of creating in INV 180, communicating in INV 282, commercializing in INV 392, and of applying a systems focus in INV 401.

#### **Eligible students:**

Undergraduate students matriculated in any field may take coursework in Innovation Engineering; these students should notify Professor Margo Lukens, (lukens@maine.edu), the Director of Academic Programs in Innovation Engineering and complete the form found at <http://foster.target.maine.edu/> signifying their intention to complete the Certificate.

Undergraduate non-degree students (students who have not yet earned a Bachelor's degree or its equivalent) may apply for admission to the Certificate of Innovation; by sending a completed form (found at <http://foster.target.maine.edu/>) to Professor Margo Lukens (lukens@maine.edu), Director of Academic Programs in Innovation Engineering, Foster Center for Student Innovation, University of Maine, Orono, ME 04469-5798. Non-degree students typically register for classes through the University's Division of Lifelong Learning. Except for courses offered through Continuing Education/Summer Session, the University allows non-degree registration in regular courses on a space-available basis.

#### **Course Sequence:**

The core courses required for the undergraduate certificate are INV 180 - Create, INV 282 - Communicate, INV 392 - Commercialize, and INV 401 - Systems. Courses should be taken in the following order:

- INV 180 Create
- INV 282 Communicate
- INV 392 Commercialize
- INV 401 Systems

At UMaine, students can begin the core sequence with INV 180 in either fall or spring, and follow it with INV 282 in either fall or spring; INV 392 is usually offered during fall semesters, and INV 401 annually in spring semester. Offering patterns at the Hutchinson Center (Belfast) allow students to complete the certificate within 12 months.

**GPA requirements to earn the certificate:** Minimum GPA of 2.9 in courses that count toward the certificate.

**Minimum Grade requirements for courses to count toward certificate:** C-

# Certificate: Maine Studies

## OVERVIEW OF REQUIREMENTS

**Minimum number of credits required to earn certificate:** 18

**Minimum Cumulative GPA required to earn certificate:** C

**Minimum Grade requirements for courses to count toward certificate:** None.

**Other GPA requirements to earn certificate:** Cumulative GPA of 2.0 in all Maine-related courses counting towards the certificate.

**Contact Information:** Carol Toner, Maine Studies Program Director, 112A Chadbourne Hall, 581-3147

The Certificate in Maine Studies offers non-degree students the opportunity to investigate Maine's cultural, historical, and physical landscapes. The program recognizes the value of a multidisciplinary approach to understanding Maine's historical and contemporary issues. The Certificate in Maine Studies is useful for those who plan to work in Maine, especially teachers, social workers, business people, policy makers and government employees. Students interested in the Certificate in Maine Studies must take a minimum of 18 credits in Maine-related courses, including MES 101, Introduction to Maine Studies and MES 201, The Maine Coast. A minimum of 12 credit hours must be University of Maine courses. Students may complete the Certificate through courses on campus or at a distance.

Students interested in the Certificate in Maine Studies should contact the Maine Studies office at 581-3147 or email [carol.toner@umit.maine.edu](mailto:carol.toner@umit.maine.edu)

## Required Courses: (6 credits)

- MES 101 - Introduction to Maine Studies Credits: 3
- MES 201 - The Maine Coast Credits: 3

Select 12 credits from the following list:

### Anthropology

- ANT 425 - Recorded Interviewing Techniques and Methods Credits: 3
- ANT 426 - Native American Folklore Credits: 3

### Art

- ARH 361 - Topics in Art History Credits: 3
- Topic: Art, Maine, and a Sense of Place

## Biology

- BIO 205 - Field Natural History of Maine Credits: 4

## English

- ENG 244 - Writers of Maine Credits: 3
- ENG 429 - Topics in Literature and Language Credits: 3
- Topic: Maine Women Writers

## Franco American Studies

- FAS 101 - Introduction to Franco American Studies Credits: 3
- FAS 230 - Franco American Women's Experience Credits: 3
- FAS 329 - Topics in Franco American Studies Credits: 3
- Topic: Borders and Beyond

## Geography

- GEO 212 - Geography of Maine Credits: 3

## Earth Sciences (Geology)

- ERS 102 - Environmental Geology of Maine Credits: 4
- ERS 209 - Geology of Maine Credits: 3

## History

- HTY 210 - History of Maine Credits: 3
- HTY 211 - Maine and the Sea Credits: 3
- HTY 316 - Shipwreck Sites: Archaeological and Historical Investigations Credits: 3

## Interdisciplinary Curricula

- INT 491 - (University Wide) A Midwife's Tale and the Social Web Credits: 3

## Maine Studies

- MES 301 - Rachel Carson, Maine, and the Environment Credits: 3

## Native American Studies

- NAS 102 - Introduction to Wabanaki Culture, History and Contemporary Issues Credits: 3
- NAS 401 - Advanced Topics in Native American Studies Credits: 3

## Political Science

- POS 203 - American State and Local Government Credits: 3

## Women's, Gender and Sexuality Studies

- WGS 201 - Topics in Women's, Gender, and Sexuality Studies Credits: 3
- Topic: Maine Women

## **Certificate: Peace and Reconciliation Studies**

### OVERVIEW OF REQUIREMENTS

**Minimum number of credits required to earn certificate:** 18

**Minimum Cumulative GPA required to earn certificate:** None

**Minimum Grade requirements for courses to count toward certificate:** A "C" or better in all PAX courses

**Other GPA requirements to earn certificate:** 2.0 minimum for courses taken in the certificate

**Contact Information:** Peace and Reconciliation Studies Office, 120 Chadbourne Hall, (207)581-2609

Peace and Reconciliation Studies is defined as the interdisciplinary examination of the conditions that make for peace, with a special emphasis on reconciliation (forgiveness) as a vital factor in the realization of peace. It also investigates the obstacles to the realization of these conditions, drawing on theories and methods from diverse cultures and traditions to focus on what makes for the development of a just and peaceful world order. Peace and Reconciliation Studies relates scholarship to praxis and challenges those who engage in it to develop new ways of thinking and acting in the world.

## Curriculum

Peace and Reconciliation Studies offers an 18-credit interdisciplinary curriculum with the following requirements. Any course with a PAX designator that is offered at any UMS site, is also part of the Peace and Reconciliation Studies Curriculum. If there is a course outside of Peace and Reconciliation Studies that you feel has value and relevance to the concentration, and you wish to take it as part of your program, please contact the Peace and Reconciliation Studies Office at (207)581-2609.

### Required Courses: (9 credits, available online)

- PAX 201 - Introduction to Peace and Reconciliation Studies Credits: 3
- PAX 290 - Nonviolence: Perceptions and Perspectives Credits: 3
- PAX 410 - Theories in Peace and Reconciliation Studies Credits: 3

### Three other PAX courses from the following list:

- PAX 250 - Peace and Pop Culture Credits: 3
- PAX 260 - Realistic Pacifism Credits: 3
- PAX 350 - Buddhism, Peace and Contemplative Traditions Credits: 3
- PAX 351 - This Sacred Earth: Ecology and Spirituality Credits: 3
- PAX 360 - Conflict Resolution: A Relational Approach To Working Through Conflict Credits: 3
- PAX 370 - Building Sustainable Communities Credits: 3
- PAX 380 - Ecovillages and Ecocities: Models of Global Restoration Credits: 3
- PAX 398 - Topics in Peace and Reconciliation Studies Credits: 3
- PAX 400 - Martin Luther King and the Promise of Social Renewal Credits: 3
- PAX 401 - Women Social Activists: Warriors for Peace and Justice Credits: 3

- PAX 451 - Mediation: Its Premises, Practices and Policies Credits: 3
- PAX 452 - Advanced Study in Transformative Mediation Credits: 3
- PAX 470 - Sustainable Communication: The Theory and Practice of Nonviolent Communication Credits: 3
- PAX 491 - Forgiveness: Creating a Culture of Peace and Reconciliation Credits: 3
- PAX 495 - Advanced Topics in Peace and Reconciliation Studies Credits: 3
- PAX 498 - Special Projects in Peace and Reconciliation Studies Credits: 1-6

## Certificate: Studies in Accounting

### OVERVIEW OF REQUIREMENTS

**Minimum number of credits required to earn certificate:** 24

**Minimum Cumulative GPA required to earn certificate:** 2.0

**Minimum Grade requirements for courses to count toward certificate:** C-

**Other GPA requirements to earn certificate:** None.

**Contact Information:** Dr. Richard Borgman, MBA Director, 5723 DP Corbett Business Building, Rm 209, Tel: (207) 581-1971, borgman@maine.edu.

The University of Maine Business School Certificate of Studies in Accounting (CSA) is designed for individuals who possess a bachelor's degree and are interested in preparing for entry level positions in the accounting field and/or prepare for the Certified Public Accounting (CPA) exam in Maine. The CSA provides an understanding of the body of technical knowledge common to all practicing accountants and is also useful when considering further studies in accounting or a graduate degree. The Certificate Program is twenty-four credit hours in accounting (8 courses).

It is advisable to consult the State of Maine Office of Professional Licensing to get up-to-date information about the state's requirements for the CPA, fee structure, and test dates visit the Maine Government webpage.

Applicants must have a bachelor's degree from a regionally accredited institution and provide an official transcript to the Maine Business School from each institution attended.

All courses must be taken for credit (no pass/fail permitted) with a C- minimum each. A cumulative GPA of 2.0 is required for granting of the CSA with at least 12 credit hours (4 courses) taken at The University of Maine. Students planning to pursue the MBA at UMaine should have a minimum grade of B- in each course. Accepted MBA students may take a 600 level accounting course as an elective for the CSA. Students are assigned an accounting faculty advisor.

For further information visit the MBA program page on the UMaine website and look for graduate certificates.

### Courses

- BUA 201 - Principles of Financial Accounting Credits: 3
- BUA 202 - Principles of Managerial Accounting Credits: 3
- BUA 301 - Intermediate Accounting I Credits: 3
- BUA 302 - Intermediate Accounting II Credits: 3



- BUA 305 - Cost Accounting Credits: 3
- BUA 310 - Auditing Credits: 3
- BUA 312 - Federal Taxation of Individuals Credits: 3

In addition, choose one of the following courses:

- BUA 406 - Advanced Managerial Accounting Credits: 3
- BUA 409 - Accounting for Governmental and Not-For-Profit Entities Credits: 3

## Other Programs

### Academ-e

The Academ-e is an early college distance education program designed to offer qualified high school juniors and seniors University of Maine courses, using state-of-the-art teaching and learning technologies combined with one on-campus experience. The first early college online education program in Maine, the University of Maine's Academ-e offers courses for university credit to Maine high school juniors and seniors through online, video-conferencing and on-campus elements. Responding to the changing nature of Maine's public schools through their increasing use of technology in teaching and learning, the Academ-e early college program serves qualified Maine high school juniors and seniors, as well as those who are home-schooled, in an adult education diploma or GED program, or attending one of Maine's approved independent high schools. The Academ-e consists of courses representing five broad areas: mathematics, sciences, arts, humanities and social sciences. Through nominations by high school principals, guidance counselors and teachers, all Maine approved high schools will have the opportunity to nominate students for the program.

Academ-e courses carry University of Maine credit and students establish a transcript from UMaine enabling them to apply their credit hours to a degree program at UMaine or to other colleges and universities into which they will eventually matriculate. It is expected that students receive dual credits (i.e., both high school and university credit).

Courses are primarily offered in an asynchronous online environment and consequently are not dictated by pre-set University or high school schedules. Students study and learn in a location and time of their choosing (e.g., school, home, library, UMS campus, etc.) that allows access to internet-based courses any time during the day, evenings or weekends. Courses are also designed to ensure adequate student and faculty interaction while accommodating students' schedules and personal circumstances.

For more information: Email - [Academ-e@umit.maine.edu](mailto:Academ-e@umit.maine.edu) or Phone- 207-581-3452 • or see the Academ-e website.

### Continuing and Distance Education

Continuing and Distance Education supports the educational needs and interests of part-time, evening, weekend, campus-based, and distance students working toward an undergraduate or graduate degree or taking courses (credit or non-credit) for personal and professional growth. CED offers degree programs, professional certificates, and community engagement opportunities designed to meet the needs of the Maine workforce and the lifelong learning pursuits of Maine citizens.

CED offers a wide range of courses on the Orono campus, the region, and statewide in face-to-face, hybrid, and online formats. Academic advisors are available through the Lifelong Learning Advising Center to assist students with course selection and

registration. Regular tuition rates apply. To enroll in a CED course call or visit the CED office in 122 Chadbourne Hall, (207) 581-3143, or visit us on the web.

## Hutchinson Center

### Hutchinson Center

The Hutchinson Center provides access to University of Maine degree programs plus a variety of community education and outreach programs. Located one hour south of the University of Maine's Orono campus in Belfast, the Hutchinson Center offers undergraduate and graduate courses. Educational opportunities include access to UMaine bachelor's degrees, graduate degrees and courses that meet general education requirements for Bachelor of Art or Bachelor of Science degrees. Credit and non-credit courses are delivered live, online or via videoconference technology. A state-of-the art telecommunications facility, with high tech biology and chemistry labs, art studio, and air-conditioned classrooms, the Hutchinson Center also hosts many community conferences and meetings.

For further information: The Hutchinson Center, 80 Belmont Avenue, Belfast, ME 04915, (207) 338-8000/ 1-800-753-9044, Fax: (207)338-8013 or on the web at [www.hutchinsoncenter.umaine.edu](http://www.hutchinsoncenter.umaine.edu).

## Peace and Reconciliation Studies

### Peace and Reconciliation Studies

The University of Maine Peace and Reconciliation Studies Program focuses on education for peace, justice, human rights, nonviolence, tolerance, global understanding, interdependence and mutuality, and environmental responsibility. Through its academic studies and various educational, research, and outreach programs, Peace and Reconciliation Studies infuses concerns for peace and the practice of transformative conflict resolution into the University of Maine campus and community. The Peace and Reconciliation Studies Program joins with the people of Maine in creating cultures of peace in our state, nation and world. [dll.umaine.edu/peace/](http://dll.umaine.edu/peace/).

### Peace and Reconciliation Studies Minor

The Peace and Reconciliation Studies minor requires a minimum of 18 credits of study: 12 credits of required PAX courses and 6 credits (or more) of PAX electives. Required courses include PAX 201, Introduction to Peace and Reconciliation Studies (which satisfies the general education requirement in the Social Contexts and Institutions, and Cultural Diversity and International Perspectives categories), PAX 410 - Theories in Peace Studies and two PAX courses chosen from PAX offerings each semester. Also available is Special Projects in Peace and Reconciliation Studies (PAX 498), which offers advanced individual study, research, and written projects in Peace and Reconciliation Studies and related areas. This course is conducted under the guidance of a faculty member associated with the Peace and Reconciliation Studies Program. Students who wish to enroll in the Peace and Reconciliation Studies minor should visit the Peace and Reconciliation Studies office, 120 Chadbourne Hall, (207) 581-2609, for assistance or further information. Enrollment is open to all undergraduate students at the University of Maine and there are no admissions requirements beyond those of the college a student is entering.

## Summer University

Summer University, established in 1895, is designed to meet the needs of full-time, part-time, day, evening, weekend, on-campus and distance students during the months of May, June, July and August. Serving degree and non-degree students, Summer University offers over 500 courses through variable calendars to those seeking educational experiences for personal and/or professional growth. Credit earned in Summer University is fully recognized. Credit may be counted toward the degrees that the University of Maine confers or may be transferred to other colleges and universities.

The Summer University office is located in 122 Chadbourne Hall, (207) 581-3143. Students who are seeking academic advising may contact a DLL Advisor through the Summer University office. [umaine.edu/summeruniversity/](http://umaine.edu/summeruniversity/)

## **Travel Study**

Continuing and Online Education collaborates with faculty members to offer travel study opportunities, that enhance classroom learning and provide direct contact with diverse cultures in a variety of international settings. Credit is variable depending upon the length of the course and its academic requirements. Recent programs have included courses in Ireland, England, Italy, Honduras, Nicaragua, Quebec, Jamaica, Tanzania, France, Cuba and Mexico. To learn more about Travel Study, contact Continuing and Distance Education office at (207) 581-3143. <http://dll.umaine.edu/travel-study/>

## **Winter Session**

Winter Session is a fully online, condensed term that runs for three weeks between the Fall and Spring semesters. Serving both traditional and non-traditional students, Winter Session offers 15-20 courses and runs in an intensive 3-week format. Like Summer University, credit may be counted toward the degrees that the University of Maine confers or may be transferred to other colleges and universities. Winter Session is managed by the Division of Lifelong Learning, housed at 122 Chadbourne Hall, (207) 581-3143.

Students seeking academic advising may contact a DLL Advisor through the DLL Advising Center. [umaine.edu/dlladvising/](http://umaine.edu/dlladvising/)

# University Wide Academic Programs

## Minor: Innovation Engineering

### OVERVIEW OF DEGREE REQUIREMENTS

**Minimum number of credits required to earn minor:** 18

**GPA requirements to earn minor:** Minimum GPA of 2.9 in courses that count toward the minor.

**Minimum Grade requirements for courses to count toward minor:** C-

**Contact Information:** Margo Lukens, Director of Academic Programs in Innovation Engineering, 108 Foster Center for Student Innovation, (207) 581-1401, lukens@maine.edu

The Minor in Innovation Engineering teaches students from any major to create, communicate, and commercialize or otherwise realize meaningfully unique ideas in any field. The Minor in Innovation Engineering is a university-wide program; courses in Innovation Engineering have been developed by faculty in the colleges of Liberal Arts & Sciences, Engineering, Business Public Policy and Health, Education, Natural Sciences Forestry and Agriculture, and the Division of Lifelong Learning.

Objectives of the Minor in Innovation Engineering: to give students the tools and confidence to create their own opportunities, and to realize a prosperous and sustaining future within or outside organizations, businesses, or institutions.

Outcomes of the Minor in Innovation Engineering: students will be able to lead change within their education, their careers, their affiliations, their communities and their personal lives.

The Minor in Innovation Engineering consists of a minimum 18 credit hours in INV courses, including:

- 12 credit hours of core courses (INV 180, INV 282, INV 392, and INV 401)
- at least 6 more hours of elective INV courses. The elective courses may include
  - a proposal and project sequence (INV 405 followed by INV 406, OR a student may petition to substitute the capstone project from their major for INV 406),
  - or special topics courses, internships, or independent study (INV 470, INV 471, INV 480, or INV 490).

INV 101, the course for first-year participants in the Innovation Living-Learning Community, may be counted for credit (1 cr.) towards the Minor.

## Minor: Interdisciplinary Disability Studies

Please note: This minor is currently suspended for potential elimination and is not accepting new students. Students currently in this minor should refer to the catalog in effect when they entered the program.

## College Success Programs

Mission statement: College Success Programs at the University of Maine help students achieve academic success, attain their educational goals, and engage in life long learning. To learn more about College Success Programs visit our website.

## **TRiO-Student Support Services Program (SSS)**

The TRiO-Student Support Services Program is funded through a U. S. Department of Education grant to increase the retention and graduation rates of low income, first generation students and students with disabilities. The Program serves 400 students each year. Students indicate their interest in Program services through an intake form filled out online. Students are notified of their selection; once selected, program services are available throughout that student's college career at UMaine. Program services include academic advising, professional counseling, peer mentoring, study skills workshops and tutoring. Grants/scholarships may be available to active first and second year students to reduce unmet need and loans. Technology workshops and assistance is also available for Program students. For further information contact us at (207) 581-2320, Student Support Services, University of Maine, Orono, ME 04469-5725, or visit our website.

## **The Tutor Program**

The Tutor Program provides small group tutoring for University of Maine students who need academic assistance in select 100 and 200 level non-web based courses. The Tutor Program's role is to help students "learn how-to-learn" course material and how to utilize the resources available on campus. A staff of peer tutors facilitates learning by encouraging students to work together to process course material as well as sharpen reasoning and questioning skills.

Students work with peer tutors in small study groups of up to 6 students, who are in the same course and have the same professor. Groups meet twice weekly, for a maximum of 2 hours per week, throughout the semester. Tutoring sessions are held Monday-Friday, during the day or evening and are conducted in a classroom on campus. Tutor groups are assigned after Add/Drop week and continue through the 8th week of the semester as funding allows.

Course material is not "re-taught" to students in the traditional sense. Instead, peer tutors use the course material to develop games and other "hands-on" activities that require students to work and manipulate the subject matter. As a result, students develop effective learning strategies and critical thinking skills.

Additionally, the Tutor Program offers drop-in tutoring, by appointment only, for specific courses at the Tutor Program classroom in Fogler Library. The schedule for drop-in tutoring is posted on the Tutor Program website by the second week of the semester.

To make an appointment, to request a small group tutor, or to schedule a drop-in appointment, go to <https://synapse.umaine.edu/> or stop by 104 Dunn Hall, or call (207) 581-2351.

Interested in becoming a peer tutor? The Tutor Program hires peer tutors in quantitative, science, and other general education courses. If interested, stop by 104 Dunn Hall to fill out an application. To view the eligibility requirements go to the tutor program website.

## **Explorations**

Students entering college are often undecided about a major or have several areas of academic interests. These students can apply for admission to Explorations rather than to one of the baccalaureate degree colleges at UMaine. Explorations provides students the opportunity to assess their abilities, interests and goals while systematically investigating various academic programs.

Through a one-credit seminar and close contact with their advisor, Explorations students engage in structured activities, which enable them to make an informed choice of major and to consider potential careers. Under the guidance of their advisors, Explorations students select courses to investigate disciplines of interest as well as to fulfill general education requirements.

Generally, students continue in Explorations for up to one year. By the end of the second semester many Explorations students feel confident they have identified an academic program that matches their abilities and intellectual or career interests. At the time of declaration of major or transfer to a college, students must meet the eligibility requirements (e.g., GPA) of the program or college of interest. Explorations students may choose to major in any of the undergraduate programs at the

University, provided they meet the eligibility standards and space is available. Further information may be obtained by calling the Assistant Dean at (207) 581-1830.

## **Pre-Law, Pre-Medical, Pre-Dental, Pre-Optometry**

Since law schools do not require specific undergraduate majors or courses, we encourage students interested in law to consider completing the Legal Studies Minor. A special pre-law advisor, who supplements the academic advisor within the major program, counsels University of Maine students planning to attend law school. Contact Crissane Blackie, (207) 581-2587 or at [crissane.blackie@umit.maine.edu](mailto:crissane.blackie@umit.maine.edu)

Few careers are as challenging or as satisfying as the practice of medicine or one of the related health professions (dentistry, optometry, veterinary medicine, and others). Admission to post-baccalaureate professional schools is highly competitive, but is a realistic goal for able students who plan their undergraduate programs carefully. Most professional schools value well-rounded applicants possessing a strong background in the liberal arts and solid preparation in the sciences. For this reason the University of Maine does not recommend one specific academic major for students planning to apply to medical or other professional schools. Instead, we advise students in any academic major who are interested in a health-professions career to pursue the minor in Pre-Medical Studies outlined below in addition to their major. Some majors offer a concentration in pre-medical studies. To find out more, visit : <http://www.umaine.edu/premed/>

Here are some of the special advantages The University of Maine offers to students planning careers as physicians, optometrists, dentists, chiropractors, podiatrists, physician assistants, veterinarians, and in related health professions.

## **Introduction to the Health Professions**

The University of Maine offers a special course for students thinking about a career in the health professions. The 4 credit course introduces students to the many different components of the modern health care system.

## **Minor in Pre-Medical Studies**

The courses within the Minor in Pre-Medical Studies meet the entrance requirements of the majority of professional schools and colleges offering post-baccalaureate programs in the health professions. The Health Professions Career Specialist can help students research the admission requirements of specific schools. Click [HERE](#) to view the Minor in Pre-Medical Studies.

## **Health Professions Career Specialist**

The University of Maine's Health Professions Career Specialist provides wide-ranging support services to students planning to attend medical school or other professional schools. The Health Professions Career Specialist

- advises students about the entrance requirements of professional schools
- helps students schedule courses and entrance examinations
- helps them prepare for admissions interviews
- coordinates letters of recommendation and assists with the application process
- arranges visits of medical school admissions officials to the University of Maine
- provides support to the Health Professions Club

## **The Maine Mentor Program**

The Maine Mentor program partners with Eastern Maine Medical Center and matches qualified undergraduates with physicians and other professionals in the Bangor area to job-shadow and learn first hand the challenges of a medical career. This

kind of experience, coupled with a record of volunteer service in medically related fields, is very important for students applying to medical schools.

## Undergraduate Research

The University of Maine offers qualified students outstanding opportunities to work with its research faculty in a wide variety of disciplines. Participation in research helps students to develop critical thinking skills and the habits of independent scholarship, and therefore is highly valued by medical and other professional schools. Students planning careers in the health professions should work with their academic advisors and the Office of Health Professions to identify research opportunities early in their undergraduate careers.

## Three plus Four Medical School Program

The University of Maine and the University of New England College of Osteopathic Medicine (UNECOM) cooperatively offer a special program for the most capable students enabling them to be admitted to UNECOM after completing three years at the University of Maine as majors in Biology, Biochemistry, or Microbiology. Students accepted into this program by UNECOM earn their baccalaureate degree from the University of Maine upon completion of their first year of medical school at UNECOM. For more details and a complete UMaine curriculum, contact the Health Professions office at (207) 581-2587.

## Three plus Four Optometry Program

This agreement allows highly qualified students to enter an accelerated program resulting in the OD (Doctor of Optometry). Accepted students become candidates for reserved slots in the New England College of Optometry program and may enter the four-year optometry program after three years of undergraduate study. Acceptance to the New England College of Optometry is contingent upon maintenance of an excellent undergraduate academic record while at UMaine as a biology major. Upon successful completion of the initial year at New England College of Optometry, students are awarded a baccalaureate degree from the University of Maine. The OD is awarded by New England College of Optometry upon successful completion of three additional years of optometry study. Interested candidates should contact the Health Professions office at (207) 581-2587.

## Three plus Three Chiropractic Program

The University of Maine and Logan University have joined together in order to offer students an opportunity to complete their undergraduate and doctor of chiropractic degrees in less time. Students complete 90 semester hours of credits at the University of Maine as a biology major. All students who successfully complete the pre-chiropractic program with a cumulative GPA of 3.25 or higher and meet all other admissions criteria shall be accepted at Logan University. Upon completion of the first year of course work at Logan University, students will be awarded a baccalaureate degree from the University of Maine. For more information, please contact the Health Professions office at (207) 581-2587.

## Dedicated Undergraduate Scholarships

Each year the University awards over \$30,000 in scholarships to undergraduates planning careers in the health professions.

## Gilbert Loan Fund

Each year the University of Maine makes low-interest loans totaling several hundred thousand dollars to its graduates who are in medical, dental or veterinary school, to help finance their professional studies. This program is made possible through a multi-million-dollar bequest to the University in the name of Charles E. Gilbert.

# ROTC

Both Army and Navy ROTC programs are available to University of Maine students who want to become commissioned officers. The Army program is headquartered on campus, while the Navy program is offered in cooperation with Maine Maritime Academy. Both programs have offices on campus and offer a variety of scholarships.

## **Army**

The Army ROTC program leads to a commission as a Second Lieutenant in the United States Army, Army Reserves, or Army National Guard. Students enrolled in ROTC classes may pursue any university curriculum that leads to a baccalaureate or higher degree.

The Army ROTC program is designed around two levels: the Basic and Advance courses of military studies. The Basic Course of MSL 100 and MSL 200 level courses are available to all university students interested in learning about leadership, teamwork, and group dynamics. Exception is MSL 100 - Leadership laboratory, which is only open to enrolled or contracted ROTC students. Students taking classes in the Basic Course are not under any obligation to the Army.

Students may take MSL courses at the 300 and 400 levels only with the permission of the Professor of Military Science. Students wishing to contract and earn a commission as a Second Lieutenant in the United States Army must earn their baccalaureate degree, complete the MSL upper division courses, and complete a Military History Course.

Students may enter the Advance Course after the Basic Course requirements are met. This is generally accomplished by one of three ways:

1. Enroll and successfully complete the 100 and 200 level course.
2. Attend a five week off-campus course the summer prior to enrolling in the Advance Course.
3. Have attended and successfully completed basic training for a service of the United States Military.

The Department of the Army offers 2-, 3-, and 4-year scholarships, and Guaranteed Reserve Forces Duty Scholarships to selected students who have demonstrated outstanding leadership and scholastic ability. These scholarships pay full tuition and mandatory fees annually, \$1200 per year for textbooks, and \$300 - \$500 per month tax free stipend during the academic year for the duration of the scholarship. Four-year scholarship winners (with 1100+ SAT scores (combine math and verbal only)) or three-year Advanced Designee scholarship winners (with 1200+ SAT scores) who attend the University of Maine will receive an additional \$2,500 grant annually from the University of Maine if they are awarded their Army ROTC scholarship prior to April 1st of their senior high school year and graduate in the top 20% of their class. Non-scholarship contracted students in the last two years of the program also receive the tax-free \$450 - \$500 monthly stipend during the academic year.

Army ROTC at the University of Maine also awards Nursing Scholarships to students excelling in the Nursing Program. The financial benefits are the same as above.

The program has administrative, medical, and physical requirements which must be met in order to qualify for a scholarship, contract and commission.

Specific information regarding the program and Army ROTC classes may be obtained by contacting a Military Science and Leadership advisor at (207) 581-1121, or toll free at 1-888-942-ROTC, or by visiting our website at <http://umaine.edu/armyrotc/>

Students should check with their individual college to determine credit awarded for Military Science and Leadership courses toward degree completion. All Military Science and Leadership credits count toward a student's overall GPA. A minor in Military Science and leadership is also offered.

## **Navy**

The Naval ROTC program is designed to train and educate qualified students for commissioning and active service as officers in the United States Navy and United States Marine Corps. Navy Option commissionees also receive a minor in Naval Science.

Program requirements:

In order to be eligible for application to this program a student must:



1. Be a US citizen
2. Be at least 17 but less than 23 years of age
3. Be physically qualified
4. Possess satisfactory records of academic ability and moral integrity
5. Demonstrate those characteristics desired of a Naval Officer and
6. Have no moral obligation or personal conviction that will prevent the bearing of arms.

The Naval ROTC Scholarship Program offers the following benefits: all tuition paid, up to \$400 per month subsistence allowance during the school year and a substantial uniform allowance. Eligible graduates of this program receive commissions in the United States Navy or Marine Corps and serve on active duty a minimum of five years. High school students may apply for the national scholarship program between March 1 of their high school junior year to November 15 of their high school senior year. Application forms are available from any Navy recruiter and most guidance counselors. Early application is recommended as this program is highly competitive. Students already enrolled at UMaine may also be eligible for non-national scholarships.

The Naval ROTC College Program offers students not on scholarship an opportunity to participate in ROTC. The monetary benefits of the College Program include: a substantial uniform allowance and up to \$400 per month subsistence allowance during the junior and senior years. Graduates of the College Program receive commissions and are required to serve on active duty for five years. Students may apply for the College Program from the beginning of their first year to the end of their sophomore year.

Students in the College Program may apply for 2 and 3-year scholarships. Selection is based on academic and Naval ROTC performance. Scholarships are also available for students in the technical majors (engineering, physics, etc.) who have successfully completed at least one semester of college. Special Navy and Marine Corps scholarships are available to Hispanic and African-American students.

Specific information regarding the program and Naval Science courses may be obtained by calling (207) 581-1551.

## **Study Abroad**

The University of Maine offers many study abroad opportunities for academic credit. Study abroad leads to world awareness, cultural understanding, personal growth, independence and self-sufficiency. For those studying in another language, it can lead to language fluency. A Study Abroad experience adds depth to a résumé and can give students a competitive edge in the job market as it reflects an open and flexible outlook to life.

The University of Maine offers several options for studying abroad. There are a number of direct exchanges with partner universities. Direct exchanges allow UMaine students to pay tuition and fees to the University of Maine, while paying room and board costs to the host institution. Other recommended programs are available through UMaine's consortium memberships or by direct enrollment, with the student responsible for payment directly to the provider or to the host school. Many programs offer instruction in English, while others require intermediate language skills. Some offer pre-program language immersion short-courses, in preparation for a semester or year of study in that language. Financial aid can be used for all University-approved programs. All areas of the world are available.

The Study Abroad program is housed within the Office of International Programs, 240 Estabrooke Hall; (207) 581-1509. For further information, contact the Office of International Programs or check the website [www.umaine.edu/international/study-abroad-programs](http://www.umaine.edu/international/study-abroad-programs).

# The Honors College

The University of Maine offers one of the nation's oldest continuously-running programs for honors-level students. Open to students in all majors, the Honors College provides a unique opportunity for motivated students to investigate diverse academic areas of the University, to be challenged in a supportive intellectual environment, and to engage fellow students and enthusiastic, distinguished faculty in thoughtful, provocative discussion. Students in the Honors College complete an academic major in one of the University's five degree-granting colleges while completing most of their general education requirements and a thesis in the Honors College. The benefits and rewards are substantial, and the program is flexible enough to be tailored to each student's needs and interests.

## For Further Information

Questions about the Honors College should be addressed to François Amar, Dean, the Honors College at the University of Maine, 145 Estebrook Hall, Orono ME 04469-5727. The phone number is (207) 581-3263 and information can also be requested at [honors@maine.edu](mailto:honors@maine.edu). The College maintains a web site at [www.honors.umaine.edu](http://www.honors.umaine.edu).

Click the link below to view additional information about the Honors College and its curriculum.

# The Honors College

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Students and faculty involved in the Honors College come from all areas of the University. As a community of approximately eight hundred students within the University of Maine, the Honors College offers small, interdisciplinary classes, where students and faculty members interact closely, sharing ideas and insights developed through critical exploration of primary sources.

The College is based on the belief that genuine excellence in college-level studies means substantial competence in areas outside a major field of specialization as well as excellence within it. An emphasis on learning that both broadens and deepens has been the foundation for the design of courses in the Honors College. The Honors curriculum expands students' perspectives by exploring areas of thought not closely related to their major fields and it allows them to work in their majors with greater intensity than would be possible within a conventional course pattern. Honors study begins with interdisciplinary broadness and concludes with unparalleled depth in the major field.

First- and second-year Honors preceptorials are limited to fourteen students. Together with faculty preceptors the students study the origins and development of civilization and culture. Every year the College offers a number of diverse third-year Honors tutorials, each of which brings together eight students, a member of the faculty, and a topic that engages them in a focused academic inquiry. The curriculum culminates with a yearlong senior thesis in which the Honors student, working closely with a faculty advisor, embarks on a course of independent scholarship, developing and completing a research or creative project.

## Administrative Structure

The Honors College is university-wide and is administered by a dean who reports to the provost. The policy-advising body for the College is the Honors Council representing faculty, staff, and students. Honors Secretaries are faculty members designated by each degree-granting college to represent the college on the Honors Council and to work with students, faculty, and the administration of the college on matters concerning Honors. A Student Advisory Board consisting of Honors College students also advises the dean.

## **Admission**

Entering first-year students are invited to join the Honors College on the basis of their admission records. To be eligible, students should have a strong academic record, good standardized test scores, and show curiosity, initiative, and intellectual flexibility in academic work. Students may also enter the College by applying to the dean. Second-semester first-year students and first-semester second-year students are invited into the College through faculty recommendations. Transfer students wishing to join the Honors College should consult with the dean.

## **Degree**

The level of honors awarded depends on the quality of the senior thesis or project and the performance at the oral thesis defense which assesses both the student's work on the thesis and in the broader curriculum. The designation appears on both the student's diploma and on the transcript; the thesis title also appears on the transcript.

## **College and University Requirements**

Successful completion of the Honors Core (HON 111, HON 112, HON 211, HON 212) and the cultural and civic engagement experiences (HON 180 and HON 170) satisfies all of the Undergraduate General Education Human Values and Social Context and Ethics requirements. HON 211 and HON 212 are also designated as Writing Intensive. Successful completion of HON 111 and HON 112 with a grade of C or better in each satisfies the University's basic composition requirement (ENG 101). Many of the University's majors accept the honors thesis as a capstone experience. For specific information, contact the Honors College.

### **Honors College courses satisfy the following General Education Requirements:**

- The complete Honors *Civilizations* four-semester sequence (HON 111, 112, 211, 212 – 16 credits) satisfies all five areas covered by the Human Values and Social Contexts requirements as well as the Ethics requirement.
- Completing both HON 111 and HON 112, each with a grade of "C" or better, satisfies the college composition (ENG 101) requirement.
- All tutorials satisfy at least one of the Human Values and Social Contexts requirements.
- Many of the University's majors accept the Honors Thesis as a capstone experience. For specific information, contact the Honors College.

In practice, this means that students who complete the *Civilizations* sequence along with an Honors tutorial (HON 311 - HON 347) have satisfied all of the University's general education requirements with the exception of the mathematics, science, and (in some cases) the capstone requirements.

### **For Further Information**

Questions about the Honors College should be addressed to François Amar, Dean, the Honors College at the University of Maine, 5716 Colvin Hall, Orono ME 04469-5716. The phone number is (207) 581-3263 and information can also be requested at [honors@maine.edu](mailto:honors@maine.edu). The College maintains a web site at [www.honors.umaine.edu](http://www.honors.umaine.edu).

## **Curriculum**

The Honors College requires its students to complete the four core courses HON 111, HON 112, HON 211, and HON 212; HON 180 or HON 188; one Honors tutorial (HON 308, HON 309, or HON 310) or Tutorial Alternative; and the Honors Thesis (HON 498 and HON 499). To graduate in Honors, students must attain a minimum 3.30 grade point average in all their course work. Sample curricula integrating Honors requirements with the course of study for each major are available from the Honors College or at [www.honors.umaine.edu/academics/curricula/](http://www.honors.umaine.edu/academics/curricula/)

## **First-year**

- HON 111 - Civilizations: Past, Present and Future I Credits: 4 (Fall)
- HON 112 - Civilizations: Past, Present and Future II Credits: 4

(Spring)

## Second-year

- HON 211 - Civilizations: Past, Present and Future III Credits: 4 (Fall)
- HON 212 - Civilizations: Past, Present and Future IV Credits: 4 (Spring)

## Third-year

One of:

- HON 308 - Visiting Scholar in Ethics Tutorial Credits: 3 (Fall)
- HON 309 - The Honors Read Tutorial Credits: 3 (Spring)
- HON 311-HON 347 Honors Tutorial (either Fall or Spring) Credits: 3  
or
- HON 350 Honors Seminar or an approved Tutorial Alternative with HON 349 (see [www.honors.umaine.edu/academics/tutorial-alternatives.htm](http://www.honors.umaine.edu/academics/tutorial-alternatives.htm))

## Fourth-year

- HON 498 - Honors Directed Study Credits: 3 (Fall)
- HON 499 - Honors Thesis Credits: 3 (Spring)

## Note:

Honors students must also complete before graduation (recommended to complete during first two years)

- HON 170 - Currents and Context Credits: 1
- HON 180 - A Cultural Odyssey Credits: 1  
or
- HON 188 - Cultural Connections Credits: 0

# Course Descriptions

## **AED 270 - Introduction to Visual Culture and Learning**

An introduction to visual culture and its relationship to the development and maintenance of human knowledge and experience. Students will explore and gain insight into diverse forms of visual culture, including those different from and similar to their own cultural experiences; and will become aware of the relationship between visual culture and the theory and practice of contemporary education as it takes place within the contexts of schools, museums and other community-based settings. Developed primarily for Art Education, Museum Education and Community Practice students.

**Prerequisites:** Art Education Majors with a minimum of sophomore standing and ART 100, ART 110, ART 120, ART 200, ARH 155, and ARH 156 - or permission of the instructor.

**Course Typically Offered:** Spring

Credits: 3

## **AED 371 - Methods and Materials in Art Education**

Introduction to instructional methods and strategies in art education. Exploration, development and evaluation of approaches to teaching, teaching and learning styles, educational materials, media and technologies. Art education majors or art certification students only. Lec 3.

**Prerequisites:** EDB 202 and EDB 221; 21 credits in Studio Art; 12 credits in Art History; 15 credits of General Education requirements.

**Corequisites:** AED 372 and AED 373.

**Course Typically Offered:** Fall

Credits: 3

## **AED 372 - Foundations of Art Education**

Includes historical, philosophical, political, psychological and sociological foundations of art education; theories of child art; and critical examination of current research, trends and issues in art education. Art education majors or art certification students only. Lec 3.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Corequisites:** AED 371 and AED 373.

**Course Typically Offered:** Fall

Credits: 3

### **AED 373 - Introduction to Curriculum**

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

**Corequisites:** AED 371 and AED 372.

**Course Typically Offered:** Fall

Credits: 3

### **AED 473 - Advanced Curriculum in Art Education**

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

**Prerequisites:** AED 371, AED 372 and AED 373 or permission.

**Course Typically Offered:** Spring

Credits: 3

### **AED 474 - SL: Topics in Art Education**

Seminar in advanced research and practice in art education and related areas. Specific topic to be announced. This course has been designated as a UMaine Service-Learning course.

**Prerequisites:** Permission

**Course Typically Offered:** Spring

Credits: 3

### **AED 496 - Field Experience in Art Education**

Students involved in pre-professional activities with art education in schools or community agencies may apply for supervision and credit for the project.

**Prerequisites:** AED 371, AED 372, AED 373 and permission.

**Course Typically Offered:** Fall & Spring

Credits: 1

### **AED 497 - Independent Study in Art Education**

Advanced projects, readings, or seminars in art education. Topic and form of study to be determined by student in consultation with faculty member.

**Prerequisites:** AED 371, AED 372, AED 373 or equivalents and permission.

**Course Typically Offered:** Fall & Spring

Credits: 1

### **AED 498 - Directed Study in Art Education**

Advanced projects, readings, or seminars in art education. Topic and form of study to be determined by student in consultation with faculty member.

**Prerequisites:** AED 371, AED 372, AED 373 or equivalents and permission.

**Course Typically Offered:** Fall & Spring

Credits: Ar

### **ANT 101 - Introduction to Anthropology: Human Origins and Prehistory**

A survey course focusing on the evolution of humankind, the development of culture, and the beginnings of civilization. Required for Anthropology majors.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and Cultural Diversity and International Perspectives Requirements.

**Course Typically Offered:** Fall

Credits: 3

## **ANT 102 - Introduction to Anthropology: Diversity of Cultures**

A survey course focusing on the nature of culture, similarities and differences among the world's cultures, relationships among cultures, and culture change. Required for Anthropology majors.

**General Education Requirements:** Satisfies the General Education Ethics and Cultural Diversity and International Perspectives Requirements.

**Course Typically Offered:** Spring

Credits: 3

## **ANT 120 - Religions of the World**

A survey of the distinctive features of the major world religions and the most studied Native American, African and aboriginal Australian religions. Focuses on the fit between myth and ritual, the problems involved in trying to understand both "from the believer's point of view," and what generalizations can be made about religion in general.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and Cultural Diversity and International Perspectives Requirements.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

## **ANT 140 - Cities of the Ancient World**

This course explores ancient urbanism in a global context. It includes theoretical approaches to the concept of 'city' and weekly explorations of urban landscapes among ancient civilizations of the world.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Course Typically Offered:** Spring

Credits: 3

## **ANT 170 - Popular Archaeology**

Many popular ideas about the past are at odds with what professional archaeologists think they know. Most of us find the past



inherently interesting, without embellishment. But we are commonly confronted by intriguing beliefs in visits by ancient astronauts, the lost continent of Atlantis, etc. While some of these ideas may have merit, many do not. Develops methods for evaluating critically the archaeological record, sorting out science from pseudoscience and distinguishing that which is plausible from that which is unlikely.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **ANT 207 - Introduction to World Archaeology**

An overview of the human record as determined by archaeology using examples drawn from the global experience.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Course Typically Offered:** Spring

Credits: 3

### **ANT 210 - Biological Anthropology**

Introduces current topics in human biology and evolution including human origins and the fossil record, human genetics and population variability, and human and non-human primate behavior.

**General Education Requirements:** Satisfies the General Education Applications of Scientific Knowledge Requirement.

**Course Typically Offered:** Variable

Credits: 3

### **ANT 212 - The Anthropology of Food**

Food is the most direct and meaningful connection people have with the environment, a connection that addresses both biological and cultural needs. This course aims at exposing students to the different ways in which anthropologists think about food across its sub-disciplines as a way to understand human origins, behavior, and cultural diversity. Themes include food procurement strategies, influence on human evolution, religious traditions and food, food as pertains to power dynamics, warfare, gender relations and identity, and the role of food in environmental and sustainable development policy-making.

**General Education Requirements:** Satisfies the General Education Population and the Environment and Cultural Diversity and International Perspectives Requirements.

**Course Typically Offered:** Fall

Credits: 3

### **ANT 221 - Introduction to Folklore**

A survey of the different genres of folklore, its forms, uses, functions and modes of transmission. Emphasis on belief, custom and legend.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and the Cultural Diversity and International Perspectives Requirements.

**Course Typically Offered:** Fall

Credits: 3

### **ANT 225 - Climate Change, Societies and Cultures**

Surveys the human dimensions of climate change from a cultural perspective: The interactions among societies, cultures, and climate change. Reviews climate-change futures and their human implications around the world; drivers of climate change; and technological, social, and cultural mitigation and adaptations strategies. Perspective throughout is universalistic (all human societies, past and present) and holistic (all realms of thought and behavior, though with particular emphasis on social, political, and cultural dimensions).

**General Education Requirements:** Satisfies the General Education Population and Environment requirement.

**Course Typically Offered:** Alternate Years

Credits: 3

### **ANT 235 - Cultural Perceptions of Nature**

Examines the concept of nature in a variety of cultural contexts. Emphasis is on the development of contemporary views and their impacts on environmental management.

**General Education Requirements:** Satisfies the General Education Population and the Environment Requirement.

**Course Typically Offered:** Spring, Odd Years

Credits: 3

### **ANT 245 - Sex and Gender in Cross-Cultural Perspective**

An exploration into the commonality and diversity of sex and gender roles in cross-cultural perspective and an examination of cultural and bio-social explanations for why such diversity exists. Foci include contemporary approaches to sex and gender, changing views about men's and women's roles in human evolution, the conditions under which gender roles vary in contemporary societies and the issues surrounding gender equality, power and politics.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives and Ethics Requirements.

**Course Typically Offered:** Fall, Odd Years

Credits: 3

### **ANT 249 - Religion and Violence**

Explores the anthropology of contemporary political violence. The ethnographic study of terrorism, guerilla warfare, state terror and human rights will be complemented by examination of the ethical and methodological concerns that arise in this special area of investigation.

**General Education Requirements:** Satisfies the General Education Ethics, Social Contexts and Institutions and Cultural Diversity and International Perspectives Requirements.

**Course Typically Offered:** Spring, Summer

Credits: 3

### **ANT 250 - Conservation Anthropology: The Socio-Cultural Dimension of Environmental Issues**

Conservation is fundamentally a socio-cultural problem. Examines the different types of human/nature relationships that emerge across various cultural, environmental, socio-economic, and political contexts. Through a comparative approach this course is designed to illustrate how culture is an important variable when creating viable conservation strategies. Themes covered in class include protected areas, indigenous and traditional knowledge, resource management, market-based conservation, environmental economics, and political ecology. Case studies: United States, Africa, Australia, Latin America, and Papua New Guinea.

**General Education Requirements:** Satisfies the General Education Population and the Environment and Cultural Diversity and International Perspectives Requirements.

**Course Typically Offered:** Fall

Credits: 3

### **ANT 252 - Civilization in South Asia**

An exploration into the nature of civilization in South Asia, focusing on India. The central religious tradition of Hinduism and the

caste order are investigated, with complementary perspectives provided by non-Hindu traditions. The impact of colonialism and development of national identities are also considered. Anthropological views are distinguished from and supplemented by other disciplinary perspectives.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives and Social Contexts and Institutions requirements.

Credits: 3

### **ANT 256 - Ethnic Conflict**

An exploration of ethnic conflict and revival today including a survey of anthropological theories of ethnicity, focusing on ethnic revival in the modern world. European and other ethnic groups of the industrialized West provide the major cases to be considered.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and Cultural Diversity and International Perspectives Requirements.

**Course Typically Offered:** Variable

Credits: 3

### **ANT 260 - Forensic Anthropology**

Provides an introduction to the application of the theory and methods of physical anthropology to medicolegal investigations and problems. The field consists of four basic topics: 1) human skeletal anatomy, 2) developing a biological profile, 3) the science of decomposition, and 4) forensic anthropology in the court system.

**General Education Requirements:** Satisfies the General Education Applications of Scientific Knowledge Requirement.

**Course Typically Offered:** Spring

Credits: 3

### **ANT 261 - Islamic Fundamentalism**

A survey of the distinctive ideological and social features of Islamic fundamentalist movements.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and Cultural Diversity and International Perspectives Requirements

**Prerequisites:** ANT 102 or ANT 120

**Course Typically Offered:** Spring, Summer

Credits: 3

### **ANT 270 - Environmental Justice Movements in the United States**

Examines how poor and racialized communities have responded to the incidence, causes, and effects of environmental racism and injustice. Special attention will be given to how critiques offered by these communities challenge the knowledge and procedural forms of justice embedded in environmental policy and democracy in the United States. Case studies will be drawn from readings on African-American, European-Americans, Chicano and Latino American, and Native Americans.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and Cultural Diversity and International Perspectives Requirements.

**Course Typically Offered:** Fall

Credits: 3

### **ANT 290 - Special Topics in Anthropology**

Intermediate treatment of specialized problems in anthropology with emphasis on analysis in frontier areas of anthropological research. Topics vary. May be repeated for credit.

**Course Typically Offered:** Variable

Credits: 3

### **ANT 295 - American Indians and Climate Change**

Introduces students to the Indian cultures of the United States and U.S. territories in the South Pacific, paying particular attention to the issue of climate change and how it is impacting indigenous peoples in these regions; also examines climate effects on natural resource conditions as it relates to Indian cultures and the roles indigenous groups play in policy responses to climate change.

**Course Typically Offered:** Variable

Credits: 3

### **ANT 300 - Basic Theory in Cultural Anthropology**

A seminar in which the most important theories shaping modern cultural and social anthropology will be presented through the

analysis of key monographs. Emphasis placed on developing critical thinking and library research skills. Required of all Anthropology majors.

**General Education Requirements:** Satisfies the General Education Social Context and Institutions, Cultural Diversity and International Perspectives and Writing Intensive Requirements.

**Prerequisites:** Permission, and ANT 102 and ANT major standing.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **ANT 311 - Geography of Climate Change**

Introduces students to theories of environmental sustainability transitions and resource use in the context of climate change.

**Prerequisites:** Any ANT or GEO course or permission

**Course Typically Offered:** Variable

Credits: 3

### **ANT 316 - Shipwreck Sites: Archaeological and Historical Investigations**

The process of a complete shipwreck site investigation, from initial research through publication. ANT 316 and HTY 316 are identical courses.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition Requirement.

**Prerequisites:** ANT 317

**Course Typically Offered:** Spring, Odd Years

Credits: 3

### **ANT 317 - Fundamentals of Archaeology**

Techniques of excavation and analysis; theoretical basis of methods and fundamental principles; application to specific case studies; the use of geological, biological, chemical and other tools in archaeological research. A one-day compulsory weekend field trip to local archaeological sites.

**General Education Requirements:** Satisfies the General Education Applications of Scientific Knowledge and Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** ANT 101 or ANT 170 or ANT 207 or permission. Required for Anthropology majors.

**Course Typically Offered:** Spring

Credits: 3

### **ANT 328 - S/He: Rituals & Folk Traditions of Gender**

This course will explore and examine several aspects of traditional cultural practices and rituals of women and men. We will look at how women and men express, question and negotiate gender in everyday face-to-face interactions, ritual celebration, and various forms of public display. Folklore, as narrative, material culture, and social practices, will also illuminate how gendered spaces, languages, and experiences provide a unique way of expressing the everyday.

**Prerequisites:** ANT 102 or ANT 221 or WST 101.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **ANT 330 - The U.S. Folk Experience**

Examines how disenfranchised groups respond through their traditional expressive folklore to the incidences, causes and effect of racism and injustice found in the United States, as well as maintaining and conveying their values, and sense of identity at simultaneous levels (individual, communal, regional) to each other and the larger society. Groups read and examined are Afro-American, Hispanic, Asian American, Native American, and Euro-American.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Cultural Diversity and International Perspectives Requirements.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **ANT 372 - North American Prehistory**

The history of North American native peoples from the first evidence to the arrival of the Europeans. Emphasis on major culture areas and issues such as glacial and postglacial adaptation, development of agriculture, and the emergence of sedentism.

**Prerequisites:** ANT 101 or ANT 207 or ANT 317 or Permission

**Course Typically Offered:** Fall

Credits: 3

## **ANT 420 - Human Impacts on Ancient Environments**

Designed to challenge students to critically evaluate the relationship between humans and their environment, and to assess the local, regional, and global impact of humans on our planet. The long, diachronic approach taken here, particularly over the past 10,000 years, will serve to broaden our understanding of how humans have effected change in our landscapes and resource distribution in the past, and ultimately how this perspective may be integrated with contemporary resource management and environmental policy for the future. Historical ecology is also introduced as a research program structured to evaluate the historical role human agency has played in shaping contemporary landscapes.

**General Education Requirements:** Satisfies the General Education Population and the Environment Requirement.

**Prerequisites:** ANT 101 or EES 100 or permission.

**Course Typically Offered:** Variable

Credits: 3

## **ANT 421 - Inca Society and Peasants of the Andes**

Explores the nature of Inca civilization of South America as it began to form in the 15th century. Also explores the organization of Andean peasant communities, which constituted the foundation of Inca society in the past and continues to dominate Andean landscapes today.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** ANT 101 or ANT 207, or permission.

**Course Typically Offered:** Variable

Credits: 3

## **ANT 425 - Recorded Interviewing Techniques and Methods**

This course will introduce students to the theory and methodology of ethnographic and oral history fieldwork as it is practiced by social scientists and humanities researchers. Students will learn to prepare research plans, develop questions, and conduct and record interviews. They will learn how to navigate the essential practices of permissions, understand the concepts of copyright of research materials as it pertains to interviews, and fulfill the requirements of the Institutional Review Board for the Protection of Human Subjects (IRB) - Required Training at the University of Maine. Students will learn about the practices of archiving research materials and how to interpret and incorporate interview research into a research paper or documentary.

**General Education Requirements:** Satisfies the General Education Ethics Requirement.

**Course Typically Offered:** Variable



Credits: 3

### **ANT 426 - Native American Folklore**

An overview of folklore and folklife covering various genres of traditional expressive culture.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Course Typically Offered:** Fall

Credits: 3

### **ANT 430 - Who Owns Native Cultures?**

The answer to the simple question of who owns Native American / American Indian / indigenous cultures and cultural productions is surprisingly complex and engages the history of anthropology and the nature of anthropological knowledge itself. Course examines the evolving relationships between anthropologists, historians, and other researchers with indigenous peoples (in particular American Indians) and what kinds of ethical and legal relationships have evolved over time to address this question. Also looks at the ways in which contemporary cultural resource management by indigenous peoples serves as a key articulation of indigenous nationhood and sovereignty. Special attention is given to recent scholarship by indigenous researchers that decolonizes standard academic practices and roots the ownership of Native cultures and research in Native communities.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** ANT 102 or NAS 101 or permission

**Course Typically Offered:** Spring

Credits: 3

### **ANT 431 - Folklore, the Environment and Public Policy**

Examines the interaction of humans with the environment from the perspective of folklore, and reviews its impact on public policy at the local, state, federal and international level.

**General Education Requirements:** Satisfies the General Education Population and the Environment Requirement.

**Course Typically Offered:** Spring

Credits: 3

## **ANT 441 - People and Cultures of the Pacific Islands**

Topics include Pacific geography, the history and prehistory of the Pacific islands, cultural traditions of the ancient Polynesians with special reference to the political evolution of their societies, cultural traditions of the Melanesians with special reference to art, warfare and ritual, cultural traditions of the Micronesians with special reference to the problems of these Oceanic people in the modern world.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** ANT 102 or ANT 300 or permission.

**Course Typically Offered:** Variable

Credits: 3

## **ANT 448 - Ethnography Through Film**

A critical analysis of film from an anthropological perspective. Students will be introduced to the history of the use of ethnographic film in anthropology, and they will consider how professional anthropologists living at different times have used motion pictures to capture aspects of human cultural behavior. Students will also examine how ethnographic films, documentaries, and popular motion pictures (past and present) have been used to represent people in a variety of cultures. We will ask how professional anthropologists may differ from other types of filmmakers in their treatment of the same cultural groups and/or subjects.

**General Education Requirements:** Satisfies the General Education Ethics Requirement.

**Prerequisites:** ANT 102 or permission.

**Course Typically Offered:** Fall, Even Years

Credits: 3

## **ANT 451 - Native American Cultures and Identities**

Covers both traditional culture patterns and modern developments and problems. Includes consideration of traditional culture areas, emphasizing adaptations and cultural dynamics, past and present.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** ANT 102 or NAS 101 or permission.

**Course Typically Offered:** Spring, Even Years

Credits: 3

### **ANT 454 - Cultures and Societies of the Middle East**

Each semester, a specific Middle Eastern conflict will be examined with particular attention to the different ways it is understood by the parties involved. The course will attempt to demonstrate the importance of understanding conflict from the insider's point of view.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and Cultural Diversity and International Perspectives Requirements and Writing Intensive Requirements.

**Prerequisites:** ANT 102 or ANT 300 or permission.

**Course Typically Offered:** Spring

Credits: 3

### **ANT 458 - Anthropology of War**

Surveys war in human prehistory and history and the anthropological theories developed to explain it. The primary focus is on pre-industrial warfare, especially the contact-era Pacific. Throughout the course, however, this comparative perspective will be brought to bear on what pre-modern warfare tells us about war in the modern world.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** ANT 102 or permission.

**Course Typically Offered:** Variable

Credits: 3

### **ANT 459 - Peoples and Cultures of South America**

Social, political, economic and religious institutions of native and mestizo peoples in South America, using examples from selected areas (Amazonian lowlands, Andean highlands, southern cone.) Traditional culture patterns and modern developments and problems, including syncretism of European and native systems and role of modern beliefs about pre-European lifeways.

**General Education Requirements:** Satisfies the General Education Social Context and Institutions and Cultural Diversity and International Perspectives requirements.

**Prerequisites:** ANT 102

Credits: 3

### **ANT 462 - Numerical Methods in Anthropology**

Introduction to how numerical methods are used in anthropological research. Topics include: survey and history of numerical methods in anthropology, presentation and description of quantitative and qualitative anthropological data, probability, testing anthropological hypotheses using parametric and nonparametric statistics, the pitfalls and potential of numerical methods in anthropology.

**General Education Requirements:** Satisfies the General Education Quantitative Literacy Requirement.

**Prerequisites:** one course in anthropology or sociology or permission.

**Course Typically Offered:** Variable

Credits: 3

### **ANT 464 - Ecological Anthropology**

Comparative study of human populations in ecosystems. Topics include the adaptive nature of culture, implications of the ecological approach for anthropological theory, sociocultural evolution and change, and contemporary problems. Case studies from simple and complex societies.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions, Population and the Environment, and Writing Intensive Requirements.

**Prerequisites:** ANT 102 or ANT 250 or Permission  
ANT 464 and 564 cannot both be taken for degree credit.

**Course Typically Offered:** Variable

Credits: 3

### **ANT 465 - Political Anthropology**

A study of mechanisms and institutions for mediating disputes and allocating public power in selected non-Western societies.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** ANT 102 or ANT 300 or permission.

**Course Typically Offered:** Variable

Credits: 3

### **ANT 466 - Economic Anthropology**

Comparative study of production, consumption and exchange in selected Western and non-Western societies. Emphasis on factors influencing economic decisions in a variety of social and cultural settings.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** ANT 102 or ANT 300 or permission.  
ANT 466 and ANT 566 cannot both be taken for degree credit.

**Course Typically Offered:** Variable

Credits: 3

### **ANT 469 - Theories of Religion**

Considers various anthropological approaches to religion including evolutionary, historical, psychological, functional, structural, and symbolic. Emphasis on the appropriateness of these theories for the wide range of cross-cultural material available.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** ANT 102 or permission.

**Course Typically Offered:** Fall

Credits: 3

### **ANT 470 - Religion and Politics**

A study of religion and politics in a wide variety of human societies, past and present with particular emphasis on 1) the interrelationships among religion, culture, and political ideology as systems of belief and value, 2) the relationship between religious and national identity and 3) the role of interests and values in determining political action.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions, Cultural Diversity and International Perspectives, and Writing Intensive Requirements.

**Prerequisites:** ANT 102 or ANT 120 or permission.

**Course Typically Offered:** Fall

Credits: 3

### **ANT 475 - Environmental Archaeology**

Introduces historical and current theoretical literature which addresses cultural environmental relationships in prehistoric contexts. Emphasis on outlining the kinds of environmental data that survive in the historical record (geological, floral, faunal, soils, etc.), the sampling methods used to collect different kinds of data and types of inferences that can be made from surviving data regarding fossil cultural environmental relationships.

**General Education Requirements:** Satisfies the General Education Population and the Environment Requirement.

**Prerequisites:** ANT 101 or ANT 317 or Permission

**Course Typically Offered:** Fall

Credits: 3

### **ANT 476 - The Ancient Maya**

Examines the origins and development of ancient Maya civilization beginning with precursors to Maya culture in the first two millennia BC and ending with the final conquest of the last independent Maya kingdom in 1697. Among the topics covered will be the rise of complex society in the Maya region, the history of individual Maya city-states and rulers, social and political organization, art and religion, craft production and economy, commoner life, hieroglyphic writing, human-environment dynamics, and the Classic Maya collapse.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** ANT 101 or ANT 170 or ANT 207 or Permission

**Course Typically Offered:** Variable

Credits: 3

### **ANT 477 - Field Research in Archaeology**

Introduction to archaeological field techniques through excavation of an archaeological site. Intensive training in site survey, excavations techniques, recording, analysis and preliminary interpretation of archaeological materials. Generally conducted on prehistoric and historic sites in Maine. Admission by application only.

**General Education Requirements:** Satisfies the General Education Applications of Scientific Knowledge and Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** permission.

**Course Typically Offered:** Summer

Credits: 2-6

### **ANT 478 - Zooarchaeology**

A laboratory course covering techniques for analysis and interpretation of osteological remains from archaeological sites. Rec 2, Lab 2.

**General Education Requirements:** Satisfies the General Education Lab in the Basic or Applied Sciences Requirement.

**Prerequisites:** ANT 317 or permission.

**Course Typically Offered:** Variable

Credits: 4

### **ANT 479 - Laboratory Techniques in Prehistoric Archaeology**

Hands-on experience in lab techniques using real archaeological materials. Includes analysis, classification and synthesis of the data. Rec 1, Lab 2.

**General Education Requirements:** Satisfies the General Education Applications of Scientific Knowledge Requirement.

**Course Typically Offered:** Spring

Credits: 3

### **ANT 480 - Andean Prehistory**

Prehistoric archaeology of the Andean region of western South America from the first arrival of people to the Spanish Conquest. Changing lifeways as Andean peoples adapted to and with new and changing environments and technologies. Origin and development of complex society in the region, culminating with the Inca Empire.

**General Education Requirements:** Satisfies the Cultural Diversity and International Perspectives and the Population and Environment General Education Requirements.

**Prerequisites:** ANT 101 or ANT 170 or ANT 207 or permission

**Course Typically Offered:** Variable

Credits: 3

### **ANT 490 - Topics in Anthropology**

Advanced treatment of specialized problems in anthropology with emphasis on analysis in frontier areas of anthropological research. Topics vary. May be repeated for credit.

**Course Typically Offered:** Variable

Credits: 3

### **ANT 492 - Capstone in Anthropology**

Provides seniors with an opportunity to conduct in-depth research and analysis with a faculty member in conjunction with an existing course. Program must be approved by department. Required of majors.

**General Education Requirements:** Satisfies the General Education Capstone Experience Requirement.

**Prerequisites:** Permission and senior standing.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1

### **ANT 493 - Capstone in Anthropology: What does it mean to be human?**

Capstone course for Anthropology and International Affairs in Anthropology majors. Addresses five themes concerning anthropology and what it means to be human. (1) Debate and Argumentation in Anthropology; (2) Science, Theory, and the Applications of Anthropological Inquiry; (3) Race and Human Variation; (4) Climate, Environment, and Culture; and (5) Religion and Warfare in Human Society. Emphasis on topics of relevance to contemporary society. Faculty from all anthropological sub-disciplines of Anthropology will contribute lectures.

**General Education Requirements:** Satisfies the General Education Capstone Experience Requirement.

**Prerequisites:** Junior or Senior standing in the Anthropology or International Affairs in Anthropology majors

**Course Typically Offered:** Spring

Credits: 3

### **ANT 494 - Method and Theory in Archaeology**



The history of, and current debates in, archaeological methods and theory, with a focus on Americanist archaeology.

**Prerequisites:** ANT 300 or ANT 317 or permission

**Course Typically Offered:** Variable

Credits: 3

### **ANT 497 - Department Projects**

A special project course. Specific content, scheduling and credit hours proposed by student in consultation with instructor. Maximum of 3 credit hours.

**Course Typically Offered:** Fall, Spring, Summer

Credits: Ar

### **ARA 101 - Elementary Arabic I**

A systematic study of the basics of the Arabic language. Equal emphasis is placed on developing listening, speaking, reading, and writing. Culture is also an integral component of this course. Intended for students with no prior study of Arabic or fewer than two years in high school. This course is the first of 2-semester sequence.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Course Typically Offered:** Fall

Credits: 5

### **ARA 102 - Elementary Arabic II**

A systematic study of the basics of the Arabic language. Equal emphasis is placed on developing listening, speaking, reading, and writing. Culture is also an integral component of this course. Intended for students who have successfully completed ARA 101. This course is the second of a 2-semester sequence.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives requirement

**Course Typically Offered:** Fall

Credits: 5

## **ARH 100 - Art and Human Experience**

An exploration of the relationships between art and human experience as they exist within historical, cross-cultural and contemporary contexts. Focus is on specific areas of human experience as they intersect with the creation, understanding and use of visual artifacts.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives and Artistic and Creative Expression Requirements. Lec 3.

**Prerequisites:** Non-art majors only.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **ARH 155 - Art and Visual Culture in the Ancient and Medieval Worlds**

Introductory survey of painting, sculpture, architecture, and forms of visual and material culture in their various contexts from the Paleolithic and Ancient Worlds to the end of the Middle Ages.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition, Cultural Diversity and International Perspectives and Artistic and Creative Expression Requirements. Lec 3.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **ARH 156 - Art and Visual Culture in the Modern Era**

Introductory survey of painting, sculpture, architecture, and other forms of visual and material culture in their various contexts from the Renaissance to the present.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Artistic and Creative Expression Requirements. Lec 3.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **ARH 251 - Classical Art and Architecture**

Survey of the art and architecture of Greece and Rome in their historical context since the beginnings of Aegean civilization to the Christianization of the Roman Empire.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition, Cultural Diversity and International Perspectives and Artistic and Creative Expression Requirements. Lec 3.

**Prerequisites:** ARH 155 or permission.

**Course Typically Offered:** Variable

Credits: 3

### **ARH 252 - Mediterranean Medieval Art and Architecture**

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

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition, Artistic and Creative Expression and Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** ARH 155 or permission.

**Course Typically Offered:** Variable

Credits: 3

### **ARH 253 - Northern European Medieval Art and Architecture**

Surveys the art and architecture of the major civilizations of Northern Europe that developed there from the fourth century through the fifteenth, including the Carolingian, Ottonian, Romanesque and Gothic eras, focussing upon the diversity of particular cultural identities and their interrelationships among one another and the Mediterranean cultures with which they interacted. Offered in 3-year rotation.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Cultural Diversity and international Perspectives Requirements.

**Prerequisites:** ARH 155 or permission.

**Course Typically Offered:** Variable

Credits: 3

## **ARH 255 - Italian Renaissance Art**

Survey of the major works of painting, sculpture and architecture of the Italian Renaissance in their historical context from the 13th century to the early 16th century.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition, Cultural Diversity and International Perspectives and Artistic and Creative Expression Requirements. Lec 3.

**Prerequisites:** ARH 156 or permission.

**Course Typically Offered:** Variable

Credits: 3

## **ARH 257 - Northern Renaissance Art**

Survey of the art of the Netherlands, France, Spain, and Germany in its historical context from Late Gothic of the 14th century to Mannerism of the 16th century.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition, Cultural Diversity and International Perspectives and Artistic and Creative Expression Requirements. Lec 3.

**Prerequisites:** ARH 155 and ARH 156 or permission.

**Course Typically Offered:** Variable

Credits: 3

## **ARH 258 - Baroque Art and Architecture**

Surveys the art and architecture of the Baroque era in Southern and Northern Europe, along with their settlements in the Americas, focus on the major shifts in the European world outlook. The course investigates how the art of the period reflects the rise of strong national identities, radically shifting political powers, growing colonialism around the globe, religious reformation and increased interests in empirical knowledge and scientific inquiry. Offered in 3-year rotation.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition, Cultural Diversity and International Perspectives and Artistic and Creative Expression Requirements.

**Prerequisites:** ARH 155 or ARH 156 or permission.

**Course Typically Offered:** Variable

Credits: 3

## **ARH 261 - Nineteenth-Century European Art**

This topical survey of European visual arts from 1700 to 1900 looks to the broader political, social and cultural contexts of the era. This class considers movements in art from Romanticism to Symbolism and Post-Impressionism.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and the Artistic and Creative Expression Requirements.

**Prerequisites:** ARH 156.

**Course Typically Offered:** Variable

Credits: 3

## **ARH 262 - Early Modern Art: From Fauvism to Surrealism**

In a thematic consideration of art and its related concepts from 1900 to 1945, this course places particular emphasis on the notions of modernity and the diversity of artistic forms that the period spawned. Lec 3.

**Prerequisites:** ARH 156 or permission.

**Course Typically Offered:** Variable

Credits: 3

## **ARH 263 - Late Modern Art: From Abstract Expressionism Through New Forms**

This thematic course considers art forms and conceptual developments from the mid-Twentieth century through the middle of the 1970's. It places particular emphasis on the expanding nature of the work of art and the changing role, place and function of the artist during the period. Lec 3.

**Prerequisites:** ARH 156 or permission.

**Course Typically Offered:** Variable

Credits: 3

## **ARH 264 - Themes and Issues in Contemporary Art**

Surveys the major topical themes in Western and non-western art from ca. 1980 to the present (including identity and body politics, globalization, the environment, millennialism, and violence and terror). The course also examines the theoretical discourses and "issues" - raised by artists, art historians, critics, philosophers, and politicians - that attend visual representation

during this period. Among those "issues" are postmodern discourse, the politics of display, the art market, and notions of originality and ownership. Various media are examined, including painting, printmaking, photography, video, film, and digital forms.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression and Western Cultural Tradition Requirements.

**Prerequisites:** ARH 156 or permission.

**Course Typically Offered:** Variable

Credits: 3

### **ARH 265 - American Art**

Survey of painting, sculpture, architecture, and other forms of visual and material culture in the United States from 1776-1945.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Artistic and Creative Expression Requirements.

**Prerequisites:** ARH 156

**Course Typically Offered:** Variable

Credits: 3

### **ARH 270 - Topical Survey in History of Art**

Surveys the historical artifacts and monuments of culture not covered by the regular rotation of Department offerings, such as those by African, Asian or Pre-Columbian peoples. Students may repeat this course for credit to study different cultures.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions, Cultural Diversity and International Perspectives and Artistic and Creative Expression Requirements.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **ARH 361 - Topics in Art History**

Identifies and develops a particular topic within the field of History of Art not covered by traditional notions of period, geographic identity, or style. Specific topics will vary from semester to semester. May be repeated for credit.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement. Lec 3.

**Prerequisites:** ARH 155 or ARH 156 or permission.

**Course Typically Offered:** Fall

Credits: 3

### **ARH 362 - Medieval Art and Architecture Seminar**

Addresses focussed topics within the field of Medieval History of Art, such as the spread of the Gothic style across Europe, the regional flavors of the Romanesque, the relationship between the Byzantine and Roman churches, etc. Students define their own research projects, work with them over the course of the semester, present them within the forum of the seminar and develop them as major papers. May be repeated for credit.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition, Cultural Diversity and International Perspectives, Artistic and Creative Expression and the Writing Intensive Requirements.

**Prerequisites:** ARH 252 and ARH 253 or permission.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **ARH 363 - Renaissance Art and Architecture Seminar**

Addresses focussed topics defined by the instructor within the field of Renaissance History of Art, such as the post-Plague decades of the fourteenth century, the origins of Mannerism, the rise of artistic theory, etc. Students define their own research projects, work with them over the course of the semester, present them within the forum of the seminar and develop them as major papers. May be repeated for credit.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition, Cultural Diversity and International Perspectives, Artistic and Creative Expression and Writing Intensive Requirements.

**Prerequisites:** ARH 255 or ARH 257 or permission.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **ARH 369 - Film and Video Theory Seminar**

Topics in film and video theory, with attention to their critical language, philosophical underpinnings, and social contexts, worked through in terms of select examples. Students define their own research projects, work with them over the course of the semester, present them within the forum of the seminar, and develop them as major papers. Topics vary each semester. May be

repeated for credit.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression, Cultural Diversity and International Perspectives and Writing Intensive Requirements.

**Prerequisites:** Permission.

**Course Typically Offered:** Variable

Credits: 3

### **ARH 397 - Independent Study in Art History**

Advanced independent study or research and writing projects in the history of art and related areas.

**Prerequisites:** Junior or senior standing and permission.

**Course Typically Offered:** Fall & Spring

Credits: Ar

### **ARH 398 - Directed Study in Art History**

Advanced independent study or research and writing projects in the history of art and related areas.

**Prerequisites:** Junior or senior standing and permission.

**Course Typically Offered:** Fall & Spring

Credits: Ar

### **ARH 451 - Art Theory and Criticism**

Examination and discussion of aesthetic theory and its relationship to the visual arts; study of a wide range of ideas in the development of aesthetic thought with primary emphasis on contemporary theory; application of theoretical systems in the critical analysis of a work of art.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Writing Intensive Requirements.

**Prerequisites:** ARH 155 and ARH 156.

**Course Typically Offered:** Variable



Credits: 3

### **ARH 452 - Critical Methods in History of Art**

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

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Writing Intensive Requirements. Lec 3.

**Prerequisites:** permission.

**Course Typically Offered:** Variable

Credits: 3

### **ARH 466 - Twentieth Century Art and Architecture Seminar**

In an in-depth consideration, this seminar focuses upon the culture, period, artists or artist, or of a particular issue in the history of art and/or architecture of the twentieth century. Specific topics vary from semester to semester. May be repeated for credit.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Writing Intensive Requirements.

**Prerequisites:** ARH 262 or ARH 263.

**Course Typically Offered:** Variable

Credits: 3

### **ARH 492 - Baroque Research Seminar**

Addresses focussed topics within the field of Baroque History of Art such as the development of genre painting, the rise of viewer engagement, visions of the New World, etc. Students define their own research projects, work with them over the course of the semester, present them within the forum of the seminar and develop them as major papers. May be repeated for credit. Offered in 3-year rotation.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition, Artistic and Creative Expression and the Writing Intensive Requirements.

**Prerequisites:** ARH 258 or permission.

**Course Typically Offered:** Variable

Credits: 3

### **ARH 493 - Medieval Research Seminar**

Focus on special topics selected by the instructor in the field of Medieval History of Art. Students will define and research their own individual projects, present them within the forum of the seminar, with the aim of delivering them at a professional conference and bring them to fruition as publishable papers. May be repeated for credit. Offered in 3-year rotation.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition, Cultural Diversity and International Perspectives, Artistic and Creative Expression and Writing Intensive Requirements.

**Prerequisites:** permission.

**Course Typically Offered:** Variable

Credits: 3

### **ARH 494 - Renaissance Research Seminar**

Focus on special topics selected by the instructor in the field of Renaissance History of Art. Students will define and research their own individual projects, present them within the forum of the seminar, with the aim of delivering them at a professional conference and bring them to fruition as publishable papers. May be repeated for credit.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition, Cultural Diversity and International Perspectives, Artistic and Creative Expression and Writing Intensive Requirements.

**Prerequisites:** permission.

**Course Typically Offered:** Variable

Credits: 3

### **ARH 495 - Modern/Post-Modern Seminar**

An advanced examination of major theoretical tendencies in modern and contemporary visual art, this seminar stresses connections with the other arts and various conceptual frames, such as Marxism, existentialism, structuralism and post-structuralism. Entails intensive reading, research and writing on selected topics that vary semester to semester. May be repeated for credit.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Writing Intensive Requirements.

**Prerequisites:** ARH 262 or ARH 263.

**Course Typically Offered:** Variable

Credits: 3

### **ARH 496 - Field Experience in Art History**

Students engaged in professional activities related to their area of study may apply for supervision and credit for the project.

**Prerequisites:** Junior or senior standing and permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: Ar

### **ARH 497 - Independent Study in Art History**

Advanced independent study or research and writing projects in the history of art and related areas.

**Prerequisites:** Junior or senior standing and permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: Ar

### **ARH 498 - Directed Study in Art History**

Advanced directed study or research and writing projects in the history of art and related areas.

**Prerequisites:** Junior or senior standing and permission.

**Course Typically Offered:** Fall & Spring

Credits: Ar

### **ARH 499 - Capstone Experience in History of Art**

As a guided practicum, this course will have senior majors draw from the full breadth of their undergraduate experiences in the

History of Art. Requires students to research a focused project developed from primary source materials, in an investigation that will result in a professional presentation, namely a publishable paper, a public lecture, a museum show or an equivalent.

**General Education Requirements:** Satisfies the General Education Capstone Experience Requirement.

**Prerequisites:** permission.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **ARP 100 - Academic Recovery Seminar**

This pass/fail course for first-year students on academic probation during the spring semester will enhance their ability to successfully develop critical academic skills, utilize available supportive resources, and balance academic and social demands. Students will identify and understand the tools that will facilitate a successful college experience, and in so doing, share the traditions, mission, and academic expectations of The University of Maine. (Pass/Fail)

**Prerequisites:** Permission.

**Course Typically Offered:** Spring

Credits: 1

### **ART 100 - Drawing I**

The fundamentals of drawing through creative exercises exploring the principles of line, value, texture, space, and form. Examines various media and their relationship to expression and composition. Lab 6.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **ART 104 - Successful Strategies for Visual Arts Majors**

A course for First Year and Transfer Students majoring in Studio Art, Art Education, or History of Art, ART 104 will introduce students to effective strategies for success in the Visual Arts. Students will learn how to develop proficiencies in creativity, strong work practices, essential artistic and writing skills, and effective critical thinking.

Credits: 1

## **ART 107 - Topics: Intro Arts**

A workshop for non-art majors, this is an introductory level course to be organized around specific themes and/or media that may vary from semester to semester. Each class will offer in-depth workshop experiences to students from a variety of backgrounds. No former studio art experience is necessary. May be repeated for credit.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1-3

## **ART 110 - 2-D Design**

Fundamentals of basic design through studio experience. Covers analysis of design, composition and basic perceptual and aesthetic aspects of color. Uses a series of problems that explore the areas listed above. Lab 6.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **ART 120 - 3-D Design**

An introduction to the fundamentals of three dimensional design including volume, mass, line, plane, space and time. Uses a series of problems that explore the areas listed above. Lab 6.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **ART 180 - Photography I**

Fundamentals of black and white photography, including film processing, printing and print control, camera basics, exposure, photographic history, lighting, and the art of photography. Lab 6.

**Prerequisites:** Art majors must have permission of advisor.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **ART 182 - Photography and Digital Imaging**

A basic course in photography that includes use of computers as part of the process. Covers basic principles such as lighting, color and selective focus. Includes material on different photographic processes including digital processes.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

## **ART 200 - Drawing II**

A continuation of the fundamentals of drawing in black and white media and the introduction of a variety of color media with continued emphasis on their relationship to expression and composition. Lab 6.

**Prerequisites:** ART 100.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **ART 220 - Sculpture I**

A series of projects that investigate the techniques and process approach in sculpture. Includes welding, carving, casting, forming and other forms of fabrication. General use of hand and power equipment. Repeatable for credit when the student takes it with different media. Lab 6.

**Prerequisites:** ART 110, ART 120, ART 200.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **ART 225 - Ceramics I**

An introduction to the tools, processes and aesthetics of ceramics. Provides students with hands-on experience and understandings of the characteristics and demands of the medium of ceramics using basic hand building and/or throwing methods for the expression of ideas and feeling. Students will learn basic hand building and/or throwing techniques to design, make and decorate vessels and other ceramic objects.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **ART 230 - Painting I**

Painting in oil or acrylic paint. Fundamentals of color mixing, paint application, composition and expressive content. Lab 6.

**Prerequisites:** ART 110, ART 120, ART 200.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **ART 240 - Printmaking I**

The fundamentals of printmaking covering monoprinting and intaglio. Emphasis on technical, aesthetic, conceptual and expressive development. Lab 6.

**Prerequisites:** ART 110, ART 120, ART 200.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **ART 250 - Graphic Design I**

Explores the principles of applied design as used in the production of brochures, catalogues, magazines, newspapers, etc. Exercises in type, layout and issues of technology will be covered. Lab 6.

**Prerequisites:** ART 110 or permission.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **ART 260 - Topics in Studio Art**

Selected topics surveying specific media, thematic content or contemporary issues. Topics will vary from semester to semester.

May be repeated for credit. Lab 6.

**Prerequisites:** ART 110, ART 120, ART 200 or permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

## **ART 270 - Digital Art I**

An introduction to two-dimensional digital art. Includes professional 2D and related software, input/output options and image creation and editing. Emphasizes using the tools for the production of fine art. (This course is identical to NMD 270.)

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Prerequisites:** ART 110 or permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

## **ART 272 - Digital Imaging**

Covers the fundamentals of digital imaging, including the acquisition of images with scanners and other input devices, modification of images with image editing software such as Adobe Photoshop, and different aspects of digital printing.

**Course Typically Offered:** Variable

Credits: 3

## **ART 280 - Photography II**

A continuation of the fundamentals of black and white photography. Lab 6.

**Prerequisites:** ART 180.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

## **ART 300 - Drawing III**



Continued study of drawing in a wide variety of media. Emphasis on creative thinking, problem solving, expression and technique. Lab 6.

**Prerequisites:** ART 200.

**Course Typically Offered:** Spring

Credits: 3

### **ART 302 - Figure Drawing**

Drawing based on the human figure. Focus on understanding the basics of human structure and incorporating this understanding with technical, expressive and aesthetic development. Lab 6.

**Prerequisites:** ART 200.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **ART 320 - Sculpture II**

A thematic and process approach to exploring concepts allowing students to pursue selected individual projects. Introduction to additional materials and techniques. Repeatable for credit when the student takes it with different media i.e. wood sculpture/metal sculpture.

**Prerequisites:** ART 220.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **ART 325 - Ceramics II**

An intermediate level course focusing on application of the processes and aesthetics of hand building and/or throwing ceramic objects. Students will participate in every aspect of creation of a ceramic object, from the initial idea, through design, to construction, surface decoration and firing. Students will learn the fundamentals of clay, slip and glaze formulation and testing.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Prerequisites:** ART 225 or permission.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

## **ART 330 - Painting II**

Further development of painting concepts with emphasis on the characteristics of materials. Individual investigations of technical and expressive issues. Lab 6.

**Prerequisites:** ART 230.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **ART 340 - Printmaking II**

Continued explorations in printmaking with emphasis on color and multi-plate color printing. Lithography will be covered. Intaglio, monoprinting, relief and other printmaking media will be studied on a rotating basis. Lab 6.

**Prerequisites:** ART 240.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **ART 350 - Graphic Design II**

Continued study of graphic design. Lab 6.

**Prerequisites:** ART 250 or permission.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

## **ART 360 - Topics in Studio Art**

Selected topics surveying particular media, thematic content or contemporary issues. Specific topics will vary from semester to semester. May be repeated for credit. Lab 6.

**General Education Requirements:** Course may satisfy level II requirements in painting, printmaking or sculpture.

**Prerequisites:** permission of instructor.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **ART 370 - Digital Art IIA: 3D Modeling and Animation**

An introduction to the concepts and tools of 3D modeling and animation on the computer. Includes techniques to create narratives and provides hands-on experience with appropriate hardware and software. (This course is identical to NMD 370.)

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Prerequisites:** ART 270 or NMD 270 or permission.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **ART 372 - Digital Art IIC: Interactivity**

An introduction to the concepts and tools of interactivity in digital art. Students will create interactive pieces and consider issues of interactivity. (This course is identical to NMD 372.)

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Prerequisites:** ART 270 or NMD 270 or permission.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **ART 397 - Independent Study in Studio Art**

Advanced independent study and research in studio art or related areas. Projects must be designed by the student and approved by the designated instructor.

**Prerequisites:** The highest level course in the subject area. Junior or senior standing and permission of instructor.

**Course Typically Offered:** Fall, Spring, Summer

Credits: Ar

### **ART 398 - Directed Study in Studio Art**

Advanced study and research in studio art or related areas directed by a faculty member.

**Prerequisites:** The highest level course in the subject area. Junior or senior standing and permission of instructor.

**Course Typically Offered:** Fall & Spring

Credits: Ar

### **ART 402 - Figure Drawing II**

Advanced study of figure drawing. Emphasis on understanding form and structure, with technical and expressive development. Lab 6.

**Prerequisites:** ART 302.

**Course Typically Offered:** Variable

Credits: 3

### **ART 420 - Sculpture III**

Individual and group collaborative projects working with site specific sculpture or installations. Emphasis on process including scale models and other considerations for final presentation for jurying. Prepares artists, engineers, architects in universal commission procedures. Field trips to research existing projects may be included in this course. Repeatable for credit when the student takes it with different media. Lab 6.

**Prerequisites:** ART 320 or permission.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **ART 430 - Painting III**

Guided study in painting stressing individual growth through special projects. Emphasis on conceptual as well as technical development. May be repeated for credit. Lab 6.

**Prerequisites:** ART 330.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **ART 440 - Printmaking III**

Continued study of printmaking through a variety and choice of printmaking media. Emphasis on conceptual as well as technical development. May be repeated for credit. Lab 6.

**Prerequisites:** ART 340.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **ART 460 - Topics in Studio Art**

Advanced study of selected topics surveying particular media, thematic content or contemporary issues. Specific topics will vary from semester to semester. May be repeated for credit. Lab 6.

**Prerequisites:** Senior standing or permission of instructor.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **ART 496 - Field Experience in Art**

Students engaged in professional activities related to their area of study may apply for supervision and credit for the project.

**Prerequisites:** Senior standing or permission.

**Course Typically Offered:** Fall & Spring

Credits: Ar

### **ART 497 - Independent Study in Studio Art**

Advanced independent study and research in studio art or related areas. Projects must be designed by the student and approved by

the designated instructor.

**Prerequisites:** the highest level course in the subject area and ART 397. Senior standing and permission of instructor.

**Course Typically Offered:** Fall, Spring, Summer

Credits: Ar

### **ART 498 - Directed Study in Studio Art**

Advanced study and research in studio art or related areas directed by a faculty member.

**Prerequisites:** the highest level course in the subject area and ART 398. Senior standing and permission of instructor.

**Course Typically Offered:** Fall & Spring

Credits: Ar

### **ART 499 - Studio Art Senior Capstone**

A capstone course for studio art majors which requires the synthesis of all previous course work and focuses on the development of essential professional practices in the visual arts.

**General Education Requirements:** Satisfies the General Education Capstone Experience and Writing Intensive Requirements.

**Prerequisites:** junior or senior standing.

**Course Typically Offered:** Fall

Credits: 3

### **AST 109 - Introduction to Astronomy**

A descriptive survey of astronomy including contemporary views of the universe. Topics include the solar system, stars, galaxies, black holes, quasars, and cosmology. May be taken without AST 110.

**General Education Requirements:** Together with AST 110, this course Satisfies the General Education Lab in the Basic or Applied Sciences Requirement. Satisfies the General Education Applications of Scientific Knowledge when taken without AST 110.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

## **AST 110 - Introduction to Astronomy Laboratory**

Laboratory and observational exercises to accompany AST 109. Lab 2.

**General Education Requirements:** Together with AST 109, this course Satisfies the General Education Lab in the Basic or Applied Sciences Requirement.

**Corequisites:** AST 109

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1

## **AST 215 - General Astronomy I**

A more detailed introduction to astronomy and astrophysics than AST 109 covering solar system astronomy including celestial mechanics, astronomical coordinate systems, Kepler's laws, and the sun. Lec 3.

**Prerequisites:** MAT 127, PHY 112 or PHY 122, or permission of instructor.

**Course Typically Offered:** Variable

Credits: 3

## **AST 216 - General Astronomy II**

An introduction to one or more of: stars, galaxies, quasars, and/or cosmology. Not given every year. This course is independent of AST 215 which is not a prerequisite. Lec 3.

**Prerequisites:** MAT 127, PHY 112 or PHY 122 or permission of instructor.

**Course Typically Offered:** Variable

Credits: 3

## **AST 451 - Astrophysics**

Application of the principles of physics to selected topics in the study of cosmogony, stellar evolution and dynamics, interstellar processes, the formation and evolution of galaxies, and cosmology. Rec 3.

**Prerequisites:** PHY 236, PHY 238, PHY 455, MAT 259.

**Course Typically Offered:** Variable

Credits: 1-3

### **AST 497 - Topics in Astrophysics**

Selected topics in areas not already covered by regular course offerings in the Department.

**Prerequisites:** permission of instructor.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1-3

### **AVS 145 - Animal Science**

Fundamental principles of the animal sciences, including animal genetics, breeding systems, the physiology of reproduction, animal nutrition, and the physiology of lactation. Lec 3, Lab 2.

**General Education Requirements:** Satisfies the General Education Lab in the Basic or Applied Sciences Requirement. Satisfies the Ethics Requirement when taken in combination with AVS 249, AVS 346 and AVS 349.

**Prerequisites:** Animal Science majors, First-year or Sophomore standing or permission

**Course Typically Offered:** Fall & Spring

Credits: 4

### **AVS 150 - History of the Human-Animal Relationship**

An examination of Humankind's association with domestic animals. Involves an examination of domestication to modern times. Topics include: origin of domestic animals, animals and early Christianity, the animal welfare movement from the 17th to the 20th century and the rise of dogs, cats and horses as privileged species. Lec 3.

**General Education Requirements:** Satisfies the General Education Ethics Requirement.

**Course Typically Offered:** Not Regularly Offered

Credits: 3



## **AVS 152 - History of Infectious Disease and Public Health**

A historical overview of the diseases that have plagued humans and their animals since prehistory and the many and varied attempts to prevent, control and treat them.

**General Education Requirements:** Satisfies the General Education Population and Environment Requirement.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

## **AVS 196 - Introduction to Equine Cooperative**

Introductory field experience in the handling and care of the University of Maine equine herd.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 0-1

## **AVS 200 - Topics in Animal and Veterinary Science**

A survey of current issues related to animal production will be researched by students who will present the issues in a series of debates. Each student will be responsible for organizing one debate team and serving on several debate teams.  
(Pass/Fail Grade Only.)

**Course Typically Offered:** Spring

Credits: 1

## **AVS 203 - Equine Management**

An introductory course designed to familiarize students with the equine industry and with the principles of equine anatomy, nutrition, disease management and routine care. Lec 3.

**Prerequisites:** BIO 100 and sophomore standing.

**Course Typically Offered:** Spring

Credits: 3

## **AVS 211 - Introduction to Aquaculture**

Principles and practices of aquaculture from international, national and local perspectives. Includes field trip. (Students may not take both SMS 211 and AVS 211 for credit).

**General Education Requirements:** Satisfies the General Education Applications of Scientific Knowledge Requirement.

**Course Typically Offered:** Fall

Credits: 3

## **AVS 243 - Centered Riding Principles of Equitation**

An introduction to basic horseback riding techniques. Proper position of the rider, understanding horses movement patterns in different gaits and the proper care, use and fit of riding equipment will be covered in the lecture. In the riding arena, students will receive instruction, grooming, riding and caring for both the horse and the equipment. May be repeated for credit.

**Course Typically Offered:** Fall

Credits: 3

## **AVS 249 - Laboratory and Companion Animal Science**

An introduction to laboratory and companion animal science. Species covered include rodents, rabbits, dogs and cats. Topics include characteristics of each species, welfare, husbandry, uses, diet and health maintenance. Lec 2. (Offered in spring of even numbered years.)

**General Education Requirements:** Satisfies the General Education Ethics Requirement when taken in combination with AVS 145, AVS 346 and AVS 349.

**Prerequisites:** Grade of C- or better in AVS 145.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 2

## **AVS 253 - Principles of Western Riding**

An introduction to the western style of horseback riding, including history, theory, styles, equipment and training methods associated with the western horse and rider. Student will receive both lecture and riding instruction. Maybe repeated for credit.

**Course Typically Offered:** Spring

Credits: 3

### **AVS 303 - Equine Management Cooperative**

Work experience at the equine operation at the J.F. Witter Teaching and Research Center. Students work in teams to manage the University equine herd, including feeding, nutrition, health management, retraining of donated horses, maintenance and marketing.

**Prerequisites:** Sophomore standing or Instructor's Permission

**Course Typically Offered:** Fall, Spring, Summer

Credits: 2

### **AVS 333 - Introduction to Natural Horse Training**

Theory and technique of Natural Horse Training. Topics include non-verbal communication between horse and trainer, predator-prey responses, principles of ground work, and use of the rope halter. May be repeated for credit.

**Prerequisites:** AVS 243 or permission.

**Course Typically Offered:** Fall

Credits: 3

### **AVS 346 - Dairy Cattle Technology**

Fundamentals of applied dairy cattle management. Areas covered include industry trends, lactation, genetics, reproduction, nutrition, health, housing and financial principles and practices involved in operating and managing a modern dairy herd. Lec 3.

**General Education Requirements:** Satisfies the General Education Ethics Requirement when taken in combination with AVS 145, AVS 249 and AVS 349.

**Prerequisites:** Grade of C- or better in AVS 145.

**Course Typically Offered:** Fall

Credits: 3

### **AVS 347 - Dairy Cattle Technology Laboratory**

Student will gain "hands-on" livestock experience through the management of the dairy herd at University of Maine Witter Farm. Responsibilities will include the feeding, milking, reproduction, health, finances and marketing of the cattle and milk products produced. Under the guidance of faculty, staff and student advisors, students evaluate herd performance, identify problems, form strategies and implement management decisions that affect the operation of the dairy. The first of a two-course sequence (with AVS 371, University Dairy Cooperative) involving dairy work experience at the Witter Farm. Lab 4.  
Offered for Pass/Fail Grade Only.

**Prerequisites:** AVS 346 or concurrently.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 2

### **AVS 349 - Livestock Management**

The selection, breeding, feeding, care and management of beef cattle, sheep and swine. Lec 3.

**General Education Requirements:** Satisfies the General Education Ethics Requirement when taken in combination with AVS 145, AVS 249 and AVS 346.

**Prerequisites:** AVS 145, AVS 455.

**Course Typically Offered:** Spring

Credits: 3

### **AVS 351 - Animal Science Techniques**

Direct application of current techniques used in the management of dairy and beef cattle, sheep and companion animals. Included are restraint, dehorning, castration, docking, milking, shearing and health management and computer applications in the animal sciences.

**Prerequisites:** A grade of C- or higher in AVS 145 and Sophomore standing

**Course Typically Offered:** Spring

Credits: 3

### **AVS 353 - Equine Reproduction and Breeding Management**

A survey of the reproductive biology of the horse and a discussion of horse breeding practices, including artificial insemination, semen evaluation and embryo transfer.

**Prerequisites:** sophomore standing or permission.

**Course Typically Offered:** Spring

Credits: 3

### **AVS 368 - Independent Study in the Animal Sciences**

An in-depth study into a specific area to be approved by the staff advisor at time of registration. (1) breeding, (2) disease, (3) management, (4) nutrition, (5) physiology. Not more than five credit hours will be permitted toward graduation.

**Prerequisites:** AVS 145 and permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: Ar

### **AVS 371 - University Dairy Cooperative**

Students are responsible for the management of the University dairy herd, including: feeding, milking, reproduction, maintenance and marketing. Students, along with faculty advisors and the herds person, make management decisions that affect the day to day operation of the University dairy.

**Prerequisites:** AVS 346 and AVS 347.

**Course Typically Offered:** Fall & Spring

Credits: 4

### **AVS 393 - Training the Standardbred Horse**

An introduction to the standardbred harness racing industry with detailed instruction on training and management of the standardbred race horse.

**Prerequisites:** sophomore standing or permission of instructor.

**Course Typically Offered:** Fall

Credits: 3

### **AVS 396 - Field Experience in Animal and Veterinary Science**

An approved program of work experience which contributes to the academic major for which academic credit is given. Students may work part time or full time for a semester in a job related to their professional career goals.  
(Pass/Fail Grade Only.)

**Prerequisites:** permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1 - 16

### **AVS 397 - Equine Internship**

Field experience in the equine industry, or with an equine veterinarian.

**Prerequisites:** AVS 303 or permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1-4

### **AVS 401 - Senior Paper in Animal Science I**

An original investigation of a problem in animal science, under the guidance of a faculty member. Students are required to submit an experimental proposal describing their research, and present an oral report to faculty and students.

**General Education Requirements:** Satisfies the General Education Writing Intensive and Capstone Experience Requirements when combined with AVS 402.

**Prerequisites:** Senior Standing and ENG 315 or ENG 317

**Course Typically Offered:** Fall

Credits: 2

### **AVS 402 - Senior Paper in Animal Science II**

Students will prepare a final copy of work done in AVS 401 and present an oral report to faculty and students. Lec 2.

**General Education Requirements:** Satisfies the General Education Writing Intensive and Capstone Experience Requirements when combined with AVS 401.

**Prerequisites:** AVS 401 and COM 103 or equivalents and senior standing.

**Course Typically Offered:** Spring

Credits: 2

### **AVS 405 - Livestock and Companion Animal Behavior**

Provides both theoretical and practical knowledge of livestock and companion animal behavior. Enables students to understand why simple improvements in management practices can bring about tremendous changes in production and performance of the animals as well as improve the ease of handling for their human caregivers. A background in the human-animal bond and the impact of humans on livestock and companion animals will be provided. Designed for animal and veterinary scientists, graduate students interested in the human-animal bond and animal-assisted therapy, and those who wish to understand more about the behavior of their companion animals.

**Prerequisites:** Grade of C- or higher in AVS 145 and Junior standing

**Course Typically Offered:** Fall

Credits: 3

### **AVS 420 - Fish Aquaculture I**

Part I of a two semester sequence. A comprehensive examination of finfish production methods. Covers aspects of fish anatomy and physiological responses to intensive culture methods. Water sources and water quality parameters and their effects on fish health will be examined. Fish culture systems from extensive pond culture to intensive land based recirculation systems and their effects on the environment will be described. Aspects of fish production at all life stages, beginning with broodstock management in this course and ending with on-growing of fish to market the following semester will be studied. Students will participate in selected techniques in fish aquaculture i.e., anatomy of fish species, live food production for larval fish, diagnostic procedures, drug residue testing, fish handling and anesthesia, spawning techniques, egg incubation techniques and computer applications during five weekday afternoon laboratories and two all day field trips. This course is identical to SMS 420. Lec 2, Lab/Field 4. (Fall-even years.)

**Prerequisites:** SMS 211.

**Course Typically Offered:** Fall, Odd Years

Credits: 3

### **AVS 433 - Equine Exercise Physiology**

Covers current concepts regarding the metabolic and physiologic factors associated with exercise and training the horse. Provides students with the scientific basis for properly designing a physical conditioning program for the equine athlete.

**Prerequisites:** CHY 121 or BMB 207, BIO 208 or BIO 377 or permission.

**Course Typically Offered:** Spring, Odd Years

Credits: 3

### **AVS 437 - Animal Diseases**

Introduction to the study of disease in animals, including the causes, pathology and control of diseases of domestic animals. Lec 3.

**Prerequisites:** BIO 377 or permission.

**Course Typically Offered:** Spring

Credits: 3

### **AVS 443 - Advanced Centered Riding**

Advanced centered riding techniques and their application to classical dressage and jumping. Development of improved balance and connection at walk, trot and canter.

**Prerequisites:** AVS 243 or permission.

**Course Typically Offered:** Fall

Credits: 3

### **AVS 455 - Animal Nutrition**

Principles of nutrition; the digestion, absorption and utilization of nutrients and the consequences of their deficiency, excess or imbalance.

**Prerequisites:** CHY 121/123, BIO 208 or equivalent.

**Course Typically Offered:** Fall

Credits: 4

### **AVS 461 - Animal Breeding**

Covers the inheritance of the commercially valuable characteristics and methods of estimating heritability and repeatability;



mating systems and their effects; progeny testing, selection indices and other methods to increase intensity and accuracy of selection. Lec 2, Lab 2.

**Prerequisites:** BIO 462 or BIO 350 and MAT 122 or MAT 232.

**Course Typically Offered:** Fall

Credits: 3

### **AVS 466 - Livestock Feeds and Feeding**

The practical application of nutrition to the production of livestock. Topics discussed include feed types and sources, feed composition and quality, nutritional requirements of various livestock and the formulation and evaluation of rations to meet nutritional needs and optimize animal performance.

**Prerequisites:** AVS 346, AVS 455.

**Course Typically Offered:** Spring

Credits: 2

### **AVS 480 - Physiology of Reproduction**

Comparative development and functions of the reproductive process in domestic animals. Lec 3.

**Course Typically Offered:** Fall

Credits: 3

### **BIO 100 - Basic Biology**

An introduction to the following fundamental topics in biology: the structure and function of cells, the molecular basis and mechanisms of genetic inheritance, concepts in evolution, mechanisms of metabolism, and ecology. Open to students in all colleges, but limited to students in programs requiring this course or intending to take additional biology courses. Lec 3, Lab 2.

Students in online lecture sections have an onsite laboratory and an onsite recitation. Lec 3, Lab 2, Rec 1

**General Education Requirements:** Satisfies the General Education Lab in the Basic or Applied Sciences Requirement.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 4

## **BIO 200 - Biology of Organisms**

Introduces functions (physiology) and structures (anatomy, morphology) of animals and plants stressing basic physiological processes and adaptations to the environment. Equal attention is given to plants and animals. Lec 3, Lab 3.

**General Education Requirements:** Satisfies the General Education Lab in the Basic or Applied Sciences Requirement.

**Prerequisites:** A grade of C- or better in BIO 100 or permission

**Course Typically Offered:** Spring

Credits: 4

## **BIO 205 - Field Natural History of Maine**

The plant and animal life and physical features of aquatic, wetland, and terrestrial ecosystems in Maine, observed during five weekday afternoon field trips and two full single-day trips on separate weekends during the first half of the semester. Each student carries out an independent field natural history project culminating in a research paper during a five-week project period (no classes) in the second half of the semester. The course concludes with a half-day field trip on winter natural history. Lec 2, Field 4.

**General Education Requirements:** Satisfies the General Education Lab in the Basic or Applied Sciences Requirement.

**Prerequisites:** C- or better in BIO 100 or SFR 100 or PSE 100

**Course Typically Offered:** Fall

Credits: 4

## **BIO 208 - Anatomy and Physiology**

An intermediate lecture and laboratory course on the structure of the human body and how it works.

**General Education Requirements:** Satisfies the General Education Lab in the Basic or Applied Sciences Requirement.

**Prerequisites:** A grade of C- or better in BIO 100 or BMB 280, PHY 122, CHY 122, and CHY 124.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 4

## **BIO 222 - Biology: The Living Science**

Examines the processes and principles of science across disciplines. Focused examples are presented from topics such as ecology, evolution and cellular biology. The role of science in the resolution of ethical issues regarding the impact of the human population on the environment will be emphasized. Lec 3.

**General Education Requirements:** Together with BIO 223, this course Satisfies the General Education Lab in the Basic or Applied Sciences Requirement. It also satisfies the Population and Environmental Sciences Requirement. If taken without BIO 223, this course Satisfies the General Education Applications of Scientific knowledge Requirement.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

## **BIO 223 - Biology: The Living Science Laboratory**

A laboratory course focused on examination of the processes and principles of science across disciplines. Exercises are presented from topics such as ecology, evolution and cellular biology. Lab 2.

**General Education Requirements:** Together with BIO 222, this course Satisfies the General Education Lab in the Basic or Applied Science Requirement.

**Prerequisites:** BIO 222 or concurrently.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1

## **BIO 307 - Introduction to Neuroscience**

An introduction to the biology of nervous systems: cellular and molecular biology of excitable tissue, physiology of synapses, histology, neuroanatomy of selected invertebrates and vertebrates, learning, and memory. Lec 3.

**Prerequisites:** BIO 200 or SMS 201, with a grade of C- or better, or permission

**Course Typically Offered:** Fall

Credits: 3

## **BIO 310 - Plant Biology**

Examines the structure (morphology, anatomy), function (physiology), reproduction, ecology, and systematic significance of the

major groups of plants. Emphasis will be given to the flowering plants and the ecology of the various plant groups. Lec 3, Lab 3. Course will include field trips during class hours.

**General Education Requirements:** Satisfies the General Education Lab in the Basic or Applied Sciences Requirement.

**Prerequisites:** BIO 200 or PSE 100 or SFR 100 or equivalent.

**Course Typically Offered:** Spring

Credits: 4

### **BIO 319 - General Ecology**

Ecological principles for the science major including environmental factors, population ecology, community ecology and ecosystem analysis. Note: Because of overlapping subject matter, this course is not open to students who have taken SMS 300 or WLE 200. Course will include field trips during class hours.

**Prerequisites:** CHY 122 and BIO 200 or SMS 201, or permission.

**Course Typically Offered:** Spring

Credits: 3

### **BIO 326 - General Entomology**

Fundamental principles of insect life and the relation of insects to plants, animals, and humans. Laboratory includes a study of structure, and systematics. An insect collection is required. Lec 3, Lab 3. Course will include field trips during class hours.

**General Education Requirements:** Satisfies the General Education Lab in the Basic or Applied Sciences Requirement.

**Prerequisites:** BIO 100.

**Course Typically Offered:** Fall

Credits: 4

### **BIO 327 - Introductory Applied Entomology**

An introduction to entomology with emphasis on regulating populations of pest insects and the fundamentals of insect biology which influence insect populations. Laboratory emphasizes identification and sight recognition of insects of importance to ornamental plants and field crops. Lec 3, Lab 2. Course will include field trips during class hours.

**General Education Requirements:** Satisfies the General Education Lab in the Basic or Applied Sciences Requirement.

**Prerequisites:** BIO 100 or PSE 100.

**Course Typically Offered:** Fall

Credits: 4

### **BIO 329 - Vertebrate Biology**

An introduction to the classes of vertebrates, their characteristics, evolution, reproduction and locomotion. Emphasis on adaptive aspects of structure and life histories. Lec 3.

**Prerequisites:** A grade of C- or better in BIO 200 or in SMS 201.

**Course Typically Offered:** Fall

Credits: 3

### **BIO 331 - Vertebrate Biology Laboratory**

A study of taxonomy of regional vertebrate fauna including structure and function of representatives of vertebrate classes and taxonomy of local vertebrates. Lab 2.

**Prerequisites:** BIO 329 or concurrently.

**Course Typically Offered:** Fall

Credits: 1

### **BIO 335 - Human Anatomy**

An intermediate course that introduces the study of human anatomy through examination of the structure of the human body and other vertebrates. It emphasizes the relationship between structure and function and encourages the development of skills in dissection and interpretation of anatomical specimens. Intended for students interested in further studies in medicine or pathology.

**Prerequisites:** BIO 200 or SMS 201

**Course Typically Offered:** Spring

Credits: 4

### **BIO 336 - Developmental Biology**

Considers the transformation of the fertilized egg into a new adult individual including the concepts of growth and development of organisms. Lec 2, Lab 4. Course will include field trips during class hours.

**Prerequisites:** BIO 200 or SMS 201

**Course Typically Offered:** Spring

Credits: 4

## **BIO 342 - Plants in Our World**

Botany and the role plants play in current and historical human society and ecology. Topics in agriculture and forestry including genetic engineering, biodiversity, and plant-based drugs. Course will include field trips during class hours.

**General Education Requirements:** Satisfies the General Education Population and the Environment Requirement.

**Prerequisites:** BIO 200 or permission.

**Course Typically Offered:** Fall, Odd Years

Credits: 3

## **BIO 350 - Concepts and Applications of Genetics**

Introductory course that integrates classical Mendelian genetics with the chromosomal, biochemical and molecular bases of inheritance. It also includes concepts of population biology within the context of genetics and current applications of modern genetic technology in everyday life. Intended for students who may not need to take advanced level classes in molecular biosciences.

Students may not receive credit for both BIO 350 and BIO 462.

**Prerequisites:** C- or better in BIO 100 and Junior Standing.

**Course Typically Offered:** Spring

Credits: 3

## **BIO 353 - Invertebrate Zoology**

The morphology, ecology, life histories and phylogenetic relationships of non-vertebrate animals, excluding insects and parasites. NOTE: Because of overlap, BIO 353 and SMS 480 cannot both be taken for degree credit. Lec 3, Lab 3. Course will include field trips during class hours.

**Prerequisites:** BIO 200 or SMS 201

**Course Typically Offered:** Fall

Credits: 4

### **BIO 354 - Animal Behavior**

Examines broad array of non-human behavior and the underlying physiological and ecological factors that shape its expression.

**Prerequisites:** C- or better in BIO 200 or in SMS 201.

**Course Typically Offered:** Spring

Credits: 3

### **BIO 355 - Animal Behavior Laboratory**

Hands-on experience in the study of a variety of behaviors expressed by animals in laboratory and field settings. Some data collection will occur outside of scheduled class time. Complements BIO 354: Animal Behavior.

**Prerequisites:** BIO 354 or concurrently.

**Course Typically Offered:** Variable

Credits: 2

### **BIO 377 - Medical Physiology**

Physiological processes in humans with emphasis on the integration of organ systems. A pre-professional course for pre-medical, pre-dental, pre-graduate school, and exercise physiology students.

**Prerequisites:** BIO 200 or BIO 208 or SMS 201, and either CHY 122 or BMB 208

**Course Typically Offered:** Fall & Spring

Credits: 3

### **BIO 378 - Medical Physiology Laboratory**

Experimental analysis of physiological processes. Some animal surgery is involved. Lab 4.

**Prerequisites:** BIO 377 concurrently or previously and 1 year of chemistry.

**Course Typically Offered:** Fall

Credits: 2

### **BIO 387 - Undergraduate Research in Biology**

Open to sophomores, juniors and seniors who have special interest and qualifications in some branch of biological research. (May be repeated for credit until a total of 6 credits have been earned.)

**Prerequisites:** Sophomore, Junior, or Senior Standing and permission

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1-6

### **BIO 388 - Research Capstone in Biology**

Open to seniors who have special interest and qualifications in some branch of biological research. (May be repeated for credit until a total of 3 credits has been earned.)

**General Education Requirements:** A total of 3 credits are required to satisfy the General Education Writing Intensive and Capstone Experience Requirements.

**Prerequisites:** senior standing and permission of department

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1-3

### **BIO 391 - Undergraduate Independent Study in Biology**

Independent Study. (May be repeated until a total of 6 credits have been earned.)

**Prerequisites:** permission of department.

**Course Typically Offered:** Fall, Spring, Summer



Credits: 1-6

### **BIO 392 - Independent Study Capstone in Biology**

Independent Study. (May be repeated for credit until a total of 3 credits have been earned.)

A total of 3 credits are required to satisfy the General Education Writing Intensive and Capstone Experience Requirements.

**Prerequisites:** permission of department.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1-3

### **BIO 396 - Field Experience in Biology**

An approved work experience which contributes to the academic major and for which academic credit is given. Students may work part time or full time for a semester and have the opportunity to gain practical experience in a job related to their professional career goals.

(Pass/Fail Grade Only.)

**Prerequisites:** junior standing and permission of instructor.

**Course Typically Offered:** Fall & Spring

Credits: 1 - 6

### **BIO 400 - Biological Sciences Writing Intensive**

Designed to supplement existing courses in Biology. Additional writing will be required in conjunction with regular course work providing students with intensive writing in their major discipline. May be repeated for credit up to a total of 4 credit hours.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** Permission; must be taken concurrently with one Biology course.

**Course Typically Offered:** Fall & Spring

Credits: 1-2

### **BIO 402 - Capstone Experience in Biological Sciences**

A senior-year experience for Biology, Botany and Zoology majors that emphasizes important biological concepts by synthesizing and augmenting prior learning. Utilizes class discussions, group participation, readings, formal student classroom presentations and a senior paper. . Lec 3.

**General Education Requirements:** Satisfies the General Education Writing Intensive and Capstone Experience Requirements

**Prerequisites:** senior standing in Biology, Botany or Zoology.

**Course Typically Offered:** Spring

Credits: 3

### **BIO 405 - Medical Laboratory Methods of Infectious Disease**

Examines the medically important parasites causing human infection, associated epidemiology and current laboratory methods employed for diagnosis. The major groups of pathogenic fungi are also discussed, including laboratory procedures for detection and identification. Applications of immunochemical and molecular methods used to diagnose or monitor a variety of infectious disease processes is emphasized. Lec 2, Lab 2.

**Prerequisites:** BMB 300/BMB 305, BMB 420/BMB 421 suggested. Clinical Laboratory Science majors or Medical Laboratory Science majors only or permission.

**Course Typically Offered:** Fall

Credits: 3

### **BIO 421 - Introduction to Medical Laboratory Methods**

An introduction to basic theory and laboratory practice in clinical hematology and urinalysis, including an introduction to the theory and function of relevant laboratory instruments. Required for Clinical Laboratory Studies or Medical Laboratory Science majors.

**Prerequisites:** BMB 322, BMB 323; Clinical Laboratory Studies or Medical Laboratory Sciences majors only or permission.

**Course Typically Offered:** Spring

Credits: 4

### **BIO 422 - Clinical Hematology**

A comprehensive study of the principles, methodology and pathological states in hematology. Lectures and laboratory practice. (EMMC)

**Course Typically Offered:** Every Year

Credits: 7

### **BIO 423 - Clinical Microbiology**

A comprehensive study of the principles and techniques of diagnostic microbiology and parasitology. Lectures and laboratory practice. (EMMC)

**Course Typically Offered:** Every Year

Credits: 7

### **BIO 424 - Clinical Immunohematology**

Fundamental techniques of blood grouping and cross-matching proceeding to advanced studies of human blood groups, theory and practice in special problems, and advanced techniques. Lectures and laboratory practice. (EMMC)

**Course Typically Offered:** Every Year

Credits: 7

### **BIO 425 - Clinical Chemistry**

Basic techniques of clinical chemistry proceeding to advanced theories and methodology. Includes theory and technique of immunochemistry. Lectures and laboratory practice. (EMMC)

**Prerequisites:** BIO 421.

**Course Typically Offered:** Every Year

Credits: 7

### **BIO 426 - Clinical Microscopy and Special Topics**

Lectures and laboratory practice in the microscopic examination of urine and body fluids. Lectures and practice in laboratory management and education theory and methods. Includes a research project on some aspect of clinical laboratory science. (EMMC.)

**General Education Requirements:** Satisfies the General Education Writing Intensive and Capstone Experience Requirements.

**Prerequisites:** BIO 421

**Course Typically Offered:** Every Year

Credits: 4

### **BIO 430 - Ecology and Systematics of Aquatic Insects**

Taxonomy, life history and ecology of aquatic insects. Emphasis on role of insects in the structure and function of aquatic ecosystems in both natural and managed settings. Field trips during class hours, research project and collection required. Lec 2, Lab 4.

**Prerequisites:** BIO 200 or SMS 201 or permission.

**Course Typically Offered:** Fall, Odd Years

Credits: 4

### **BIO 432 - Biology of the Fungi**

Ecology, physiology and classification of the major groups of fungi and their impact on human affairs. Laboratory and fieldwork will emphasize current techniques used to study fungi. (This course is identical to BIO 532.) Lec 2, Lab 4. Course will include field trips during class hours and on weekends.

**General Education Requirements:** Satisfies the General Education Lab in the Basic or Applied Sciences Requirement.

**Prerequisites:** BIO 100 and BIO 200 or equivalents or permission.

**Course Typically Offered:** Fall, Odd Years

Credits: 4

### **BIO 433 - Mammalogy**

Considers the characteristics, functional anatomy, behavior and ecology of mammals. Lectures, laboratory study and field trips. Lec 3, Lab 3.

**Prerequisites:** BIO 329 or permission.

**Course Typically Offered:** Spring, Even Years

Credits: 4

## **BIO 434 - Avian Biology and Ecology**

Advanced discussion of the characteristics, functional morphology, behavior, evolution, biogeography, and ecology of birds. Lectures and an independent project. Lec 3.

**Prerequisites:** MAT 232 and BIO 200 or SMS 201, and either BIO 319 or WLE 200 or SMS 300 or permission

**Course Typically Offered:** Spring, Odd Years

Credits: 3

## **BIO 437 - Avian Biology and Ecology Laboratory**

This field and laboratory course emphasizes field skills critical for the investigation of wild birds. Its primary focus is on species identification and phylogenetic relationships, but students will also explore avian anatomy (and how it relates to identification and phylogeny) and will design and execute a simple study to answer an ecological question using real data gathered by the class (and past classes). Includes one required all day field trip on a weekend.

**Prerequisites:** BIO 434 or concurrently

**Course Typically Offered:** Spring, Odd Years

Credits: 1

## **BIO 438 - Morphogenesis in Development and Disease**

Analysis of interacting systems in normal development and metastatic cancer and neuromuscular diseases. Study of regulation of morphogenesis and differentiation at the organ, tissue and cellular levels, with emphasis on experimental approaches towards problems in development, cancer biology, and neuromuscular diseases.

**General Education Requirements:** Satisfies the General Education Capstone Experience and Writing Intensive Requirements.

**Prerequisites:** BIO 200 or SMS 201 and Junior or Senior Standing

**Course Typically Offered:** Variable

Credits: 3

## **BIO 441 - Microscopy**

Principles of operation and practical application of equipment and techniques used to image and analyze the very small. Covers microscopy by lights (conventional, laser, near-field), electron (transmission and scanning), ion, and scanning-probe instruments and techniques for microanalysis of atomic and chemical composition. Emphasis on, but not limited to, biological material. Lec. 2.

**Prerequisites:** 1 year chemistry, 1 year physics, 1 year biology.

**Course Typically Offered:** Spring

Credits: 2

### **BIO 447 - Experimental Ecology**

An advanced course in ecology that uses an experimental approach to explore concepts shaping terrestrial and aquatic systems at individual, population, community, ecosystem and landscape scales. Explores the design, implementation, analysis and presentation of experiments through hands-on student projects, lectures, writing assignments and literature discussions. Note: BIO 447 and BIO 547 cannot both be taken for degree credit. Lec 2 Lab 6.

**General Education Requirements:** Satisfies the General Education Writing Intensive and Capstone Experience Requirements

**Prerequisites:** BIO 319 or BIO 463 or BIO 468 or SFR 407 or SMS 300 or SMS 352 or SMS 475 or WLE 200 or WLE 423 .

**Course Typically Offered:** Not Regularly Offered

Credits: 4

### **BIO 450 - Histology**

Microscopic anatomy of animal tissues. Lec 2, Lab 4. Course will include field trips during class hours.

**General Education Requirements:** Satisfies the General Education Capstone Experience and Writing Intensive Requirements.

**Prerequisites:** Junior standing and BIO 200 or BIO 208 or SMS 201 or permission

**Course Typically Offered:** Fall

Credits: 4

### **BIO 452 - Plant Physiology**

Physiological processes in plants, with emphasis on water relations, mineral nutrition and physiological ecology. Lec 3.

**Prerequisites:** BIO 100 and one year of chemistry; BIO 200 recommended.

**Course Typically Offered:** Fall

Credits: 3

### **BIO 455 - Biological Invasions**

Analysis of mechanisms behind species establishment in new areas, their impact on native ecology, theoretical bases of invasion-related phenomena, and economic and sociopolitical costs inflicted by exotic species. NOTE: BIO 455 and BIO 555 cannot both be taken for degree credit.

**General Education Requirements:** Satisfies the General Education Population and the Environment Requirement.

**Prerequisites:** BIO 319 or WLE 200 or SMS 300 or SMS 352 or SFR 407 or permission of instructor.

**Course Typically Offered:** Spring, Odd Years

Credits: 4

### **BIO 462 - Principles of Genetics**

An intermediate course that integrates Mendelian genetics with molecular genetics and genomics. The course provides an in-depth analysis of the nature of hereditary factors and the regulatory mechanisms involved in their expression and transmission. Recommended for students intending to pursue post-baccalaureate studies in the medical fields or graduate studies in any life science discipline. Lec 3 Rec 1  
Students may not receive credit for both BIO 462 and BIO 350.

**Prerequisites:** BIO 100 and either BMB 280 or BMB 300 or BMB 322

**Course Typically Offered:** Fall

Credits: 3

### **BIO 463 - River Ecology**

An introduction to the ecology of rivers with emphasis on the role of physical and biological factors in controlling ecosystem processes and how these processes are influenced by human activities. Field trips and research projects required. Lec 2, Lab 4.

**General Education Requirements:** Satisfies the General Education Capstone Experience and Writing Intensive Requirements.

**Prerequisites:** BIO 319 or SMS 300 or WLE 200 or permission .

**Course Typically Offered:** Variable

Credits: 4

### **BIO 464 - Taxonomy of Vascular Plants**

The primary emphasis is identification of major families and genera of flowering plants. Topics relating to the origin of plant diversity - phylogeny, evolution, pollination, hybridization, biogeography, and the flora of Maine - are also considered. Lec 2, Rec 1, Lab 2. Course will include field trips during class hours.

**General Education Requirements:** Satisfies the General Education Lab in the Basic or Applied Sciences Requirement.

**Prerequisites:** BIO 200 or SFR 100 or PSE 100.

**Course Typically Offered:** Fall

Credits: 4

### **BIO 465 - Evolution**

The origin and development of evolutionary theory and the mechanisms which bring about the genetic differentiation of groups of organisms. Lec 3.

**Prerequisites:** BIO 100.

**Course Typically Offered:** Spring

Credits: 3

### **BIO 468 - Lake Ecology**

The ecology of inland waters, with emphasis on the physical, chemical and biological characteristics of lakes. Lec 3.

**Prerequisites:** BIO 200 and CHY 122/124 or BMB 208/210; BIO 319 or SMS 300 or WLE 200 recommended.

**Course Typically Offered:** Fall, Odd Years

Credits: 3

### **BIO 474 - Neurobiology**



Focuses on the organization and function of the nervous systems in various animals. Specifically addresses how single nerve cells function; how groups of neurons interact; how systems of neurons provide brain function and behavior. Sensory and motor system interplay will be emphasized. Note: Because of overlap, BIO 474 and BIO 574 cannot be take for degree credit.

**Prerequisites:** A grade of C- or better in BIO 200 or in SMS 201, and CHY 122, and PHY 112 or PHY 121 or permission.

**Course Typically Offered:** Spring

Credits: 3

### **BIO 476 - Paleoecology**

Explores how paleoecology is used to expand the temporal scale over which ecologists pose and investigate questions. Explores how climate change has affected terrestrial and freshwater systems over the Quaternary, and how lake ecosystems have changed in recent centuries. NOTE: Because of overlap, BIO 476 and BIO 572 cannot both be taken for degree credit. Lec 3, Lab 3.

**Prerequisites:** BIO 319 or BIO 468 or FES 407 or SMS 300 or SMS 352 or WLE 200.

**Course Typically Offered:** Spring, Even Years

Credits: 4

### **BIO 479 - Endocrinology**

A comparative survey of vertebrate endocrine pathways, including hormone synthesis and regulation, associated with a wide array of animal behaviors, including courtship, parental care, dispersal, foraging, and migration. This course complements BIO 354 and BIO 524.

**Prerequisites:** BIO 377 or BIO 208 or SMS 485, and either BMB 280 or BIO 480 or BMB 300 or BMB 322 or permission

**Course Typically Offered:** Variable

Credits: 3

### **BIO 480 - Cell Biology**

Examines the fundamental cellular, sub-cellular and molecular characteristics of cells with emphasis on structure and function of organelle systems common to eukaryotic cells. Lec 3.

**Prerequisites:** BIO 200 or BIO 208 or SMS 201, and either CHY 252 or BMB 322.

**Course Typically Offered:** Fall

Credits: 3

### **BIO 481 - Seminar in the Biological Sciences I**

Literature reviews and focused studies of topics selected from current biological research.

**Course Typically Offered:** Fall & Summer

Credits: 1-3

### **BIO 483 - Cell Biology Laboratory**

A laboratory course consisting of exercises employing techniques commonly utilized in cell biological research. Lab 2.

**Prerequisites:** BIO 480 or concurrently.

**Course Typically Offered:** Fall

Credits: 1

### **BIO 496 - Field Experience in Biological Sciences**

Students work as field botanists pursuant to an authorized activity or research project.

**Course Typically Offered:** Fall & Summer

Credits: 1-6

### **BLE 201 - Fundamentals of Bioengineering**

Introduction to basic engineering concepts as they apply to biological systems; molecular and biochemical kinetics; thermodynamic principles, and their applications to material and energy balances in closed and open biological systems (biochemical cycles, cells, systems); integration of basic mathematical, chemical and physical concepts into bioengineering practice; introduction to the biomedical and biotechnology industries.

**Prerequisites:** CHY 121, CHY 122, MAT 126 and MAT 127

**Course Typically Offered:** Fall

Credits: 4

## **BLE 202 - Transport Processes in Biological Systems**

Introduction into transport phenomena related to biological systems. Topics to be covered include fluid dynamics, mass transfer, heat transfer, dimensional analysis, transport in complex systems, conservation laws and macroscopic balances. These engineering tools will be applied to biological systems such as blood flow and transport across cell membranes.

**Prerequisites:** BLE 201 or permission.

**Course Typically Offered:** Spring

Credits: 4

## **BLE 396 - Field Experience in Biological Engineering**

An approved program work experience which contributes to the academic major and for which academic credit is given. Students may work part time or full time for a semester in a job related to their professional career goals.  
(Pass/Fail Grade Only.)

**Prerequisites:** junior standing and permission.

**Course Typically Offered:** Fall & Summer

Credits: 1 - 16

## **BLE 401 - Applications of Bioengineering**

Analysis of performance characteristics of biological systems in terms of material and energy balances, kinetics, and transport processes. Approaches toward design of artificial assist devices and delivery of therapeutics based upon the relevant performance characteristics and pharmacokinetics.

**Prerequisites:** BLE 201 and BLE 202.

**Course Typically Offered:** Fall

Credits: 3

## **BLE 402 - Biomaterials and the Cellular Interface**

The course is focused on the application of bioengineering principles to the design, testing, and use of biomaterials. The critical properties of materials such as those used for fabrication of biocompatible implanted devices, surgical materials and diagnostic tests will be examined. The course will address the contribution of cell-surface interactions, tissue compatibility, physical stability, and other parameters to the identification of design constraints.

**Prerequisites:** BLE 201, BLE 202, BMB 280 and CHY 251

**Course Typically Offered:** Fall

Credits: 3

### **BLE 403 - Instrumentation in Bioengineering**

A range of widely used clinical, diagnostic and therapeutic instrumentation is presented. Students are made aware of emerging tools and methods. Theory, application, design, components and limitations of a number of laboratory and clinical instruments are presented. Students gain the skills necessary to design their own instruments and methods. Key principles are further elucidated and where appropriate demonstrated during a weekly recitation.

**Prerequisites:** BLE 201 and BLE 202, or permission.

**Course Typically Offered:** Not Regularly Offered

Credits: 4

### **BLE 492 - Design Project**

Designed to give students in Biological Engineering a supervised design experience. Each student will be required to select and design components and systems for engineering projects identified by the BLE faculty. Requires the student to demonstrate his or her ability to understand and apply scientific principles and engineering knowledge to the solution of real life problems. Rec 1, Lab 8.

**General Education Requirements:** Satisfies the General Education Capstone Experience and Writing Intensive Requirements.

**Prerequisites:** Junior standing in the Biological Engineering curriculum. A minimum of 4 credits must be taken over a period of two or more semesters.

**Course Typically Offered:** Fall & Spring

Credits: Ar

### **BLE 497 - Special Problems in Bioengineering**

Independent study.

**Course Typically Offered:** Fall, Spring, Summer

Credits: Ar

### **BMB 110 - Plagues Past and Present**

Explores the nature of emerging and re-emerging infectious diseases from biological, historical, societal, technological and environmental perspectives.

**General Education Requirements:** Satisfies the General Education Population and the Environment Requirement.

**Course Typically Offered:** Spring

Credits: 3

### **BMB 150 - Genome Discovery I: From Dirt to DNA**

Provides laboratory experience working on a bacteriophage genomics research project. Students will study novel bacteriophage they isolate from the environment. Topics covered include phage biology, bacteria and phage culturing and amplification, DNA isolation, restriction digest analysis, agarose gel electrophoresis, and electron microscopy. (HON 150 and BMB 150 are identical courses.)

**Prerequisites:** Permission

**Course Typically Offered:** Fall

Credits: 3

### **BMB 155 - Genome Discovery II: From DNA to Genes**

Provides laboratory experience working on DNA sequence from a bacteriophage isolated during the previous semester. Topics include bioinformatics, genome annotation, open reading frame and RNA identification, BLAST analysis, phylogenetics and submission to a genomic database. In addition students will gain skills in designing and running computational experiments, reading the scientific literature, writing scientific papers, and making oral presentations. (HON 155 and BMB 155 are identical courses)

**Prerequisites:** BMB 150 or HON 150

**Course Typically Offered:** Spring

Credits: 3

## **BMB 207 - Fundamentals of Chemistry**

Reviews the essentials of inorganic chemistry including measurements, elements, compounds and bond formation, chemical reactions and quantities, gasses, solutions and acid-base chemistry as they relate to biological chemistry. BMB 207 does not serve as a prerequisite for CHY 122, and is not recommended for pre-medical, pre-dental, pre-veterinary, or pre-optometry programs of study.

**General Education Requirements:** Together with BMB 209, this course Satisfies the General Education Lab in the Basic or Applied Sciences Requirement. Satisfies the General Education Applications of Scientific Knowledge Requirement when taken without BMB 209. Lec 3.

**Prerequisites:** one year of high school chemistry.

**Course Typically Offered:** Fall & Summer

Credits: 3

## **BMB 208 - Elementary Physiological Chemistry**

Structures and properties of biological molecules, including carbohydrates, lipids, proteins, nucleic acids, vitamins and hormones, composition and function of body fluids, study of digestion and metabolism. BMB 208 does not serve as a prerequisite for CHY 251, and is not recommended for pre-medical, pre-dental, pre-veterinary, or pre-optometry programs of study.

**General Education Requirements:** Together with BMB 210, this course Satisfies the General Education Lab in the Basic or Applied Sciences Requirement. Satisfies the General Education Applications of Scientific Knowledge Requirement when taken without BMB 210.

**Prerequisites:** BMB 207 or CHY 121.

**Course Typically Offered:** Variable

Credits: 3

## **BMB 209 - Fundamentals of Chemistry Laboratory**

Laboratory techniques in the essentials of inorganic chemistry and reactions of organic compounds presented in BMB 207. Lab 2.

**General Education Requirements:** Together with BMB 207, this course Satisfies the General Education Lab in the Basic or Applied Sciences Requirement.

**Prerequisites:** BMB 207 or concurrently.

**Course Typically Offered:** Fall

Credits: 1

## **BMB 210 - Elementary Physiological Chemistry Laboratory**

Laboratory in the structure and properties of biological molecules presented in BMB 208. Lab 2.

**General Education Requirements:** Together with BMB 208, this course Satisfies the General Education Lab in the Basic or Applied Sciences Requirement.

**Prerequisites:** BMB 208 or concurrently. BMB 209 or equivalent.

**Course Typically Offered:** Spring

Credits: 1

## **BMB 221 - Organic Chemistry**

Basic theories of organic chemistry, including reactions, mechanisms and nomenclature. Emphasis on those aspects of organic chemistry which relate to biological chemistry.

BMB 221 does not serve as a prerequisite for CHY 252 and is not recommended for pre-medical, pre-dental, pre-veterinary, or pre-optometry programs of study.

**Prerequisites:** A grade of C- or better in BMB 207 or in both CHY 121 and 123

**Course Typically Offered:** Fall

Credits: 3

## **BMB 222 - Laboratory in Organic Chemistry**

Laboratory exercises illustrating the principles presented in BMB 221. Lab 2.

**Course Typically Offered:** Fall

Credits: 1

## **BMB 240 - Microbiology for the Professional Nurse**

This course covers the basics of microbiology needed for the baccalaureate nursing students. The course emphasizes the role of microorganisms in human health and illness.

**Prerequisites:** Nursing Majors, C or better in BIO 100, and C or better in either BMB 207 and BMB 209 or in CHY 121 and CHY 123.

**Course Typically Offered:** Spring

Credits: 3

### **BMB 241 - Microbiology for the Professional Nurse Laboratory**

This is the laboratory component for BMB 240. This lab introduces Nursing students to the basic techniques of microbiology including staining, culturing and identification of microorganism. This material covered in this lab matches the content of BMB 240, Microbiology for the Professional Nurse.

**Prerequisites:** BMB 240

**Course Typically Offered:** Spring

Credits: 2

### **BMB 280 - Introduction to Molecular and Cellular Biology**

An in-depth introduction to macromolecules, cell structure, metabolic processes, gene expression and molecular replication common to all organisms. Lec 3.

**Prerequisites:** BIO 100.

**Course Typically Offered:** Spring

Credits: 3

### **BMB 300 - General Microbiology**

A basic biology course dealing with general principles as illustrated by microorganisms, in bacteria and viruses. Covers cell structure, cell metabolism, genetics, geochemical activities, and host-parasite relations. Lec 3.

**Prerequisites:** 1 year of biology that includes BIO 100 & either BIO 200, BIO 208 or BMB 280, & 1 year of chemistry that includes BMB 207, 208, 209, & 210 or CHY 121, 122, 123, & 124. Minimum grade of C- is required in all courses.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3



## **BMB 305 - General Microbiology Laboratory**

A laboratory study of the properties of bacteria and related microorganisms including techniques and identification. Suggested for students majoring in sciences. Lab 4.

**Prerequisites:** BMB 300 or concurrently.

**Course Typically Offered:** Fall & Summer

Credits: 2

## **BMB 322 - Biochemistry**

A study of the properties of proteins and enzymes, nucleic acids, carbohydrates, and lipids, metabolism and energy production, replication and protein synthesis. Lec 3.

**Prerequisites:** BMB 221 or CHY 251.

**Course Typically Offered:** Spring

Credits: 3

## **BMB 323 - Biochemistry Laboratory**

Laboratory exercises illustrating the principles presented in BMB 322. Lab 2, Recitation 1.

**Course Typically Offered:** Spring

Credits: 2

## **BMB 400 - Molecular Genetics**

The structure of DNA and of genes, and the mechanisms of gene regulation, particularly as they pertain to cell growth and differentiation. Includes a discussion of the experimental techniques used in the genetic manipulation of organisms. Lec 3.

**Prerequisites:** BMB 280, BMB 322.

**Course Typically Offered:** Fall

Credits: 3

## **BMB 420 - Infectious Disease**

Examines medically important bacteria, viruses, fungi, and parasites causing human infection. Introduces major classes of pathogens and host immunity to microbes. Covers pathogenesis, virulence factors, clinical symptoms, transmission, epidemiology, diagnosis, prevention and treatment for individual microbes.

**Prerequisites:** BMB 300, BMB 305.

**Course Typically Offered:** Spring

Credits: 3

## **BMB 421 - Infectious Disease Laboratory**

Introduction to procedures used in the clinical diagnostic laboratory to identify the causative agent of human infectious diseases.

**Prerequisites:** BMB 420 or concurrently.

**Course Typically Offered:** Spring

Credits: 2

## **BMB 430 - Bacterial Physiology**

The properties and behavior of bacteria with respect to their chemical and physical requirements for life and reproduction. Lec 3.

**Prerequisites:** BMB 300, BMB 322.

**Course Typically Offered:** Spring, Even Years

Credits: 3

## **BMB 431 - Bacterial Physiology Laboratory**

Laboratory experiments and exercises designed to expose students to aspects of bacterial physiology and to selected assays, techniques, and equipment used in physiology research. Lab 2.

**Prerequisites:** BMB 300, BMB 322.

**Course Typically Offered:** Spring, Even Years

Credits: 1

### **BMB 440 - Introductory Immunology**

An introduction to the organization and function of the immune system including the basic properties of humoral and cell-mediated immune responses, the reactions of antigens and antibodies and the lymphocytes involved.

**Prerequisites:** BMB 300 and either BMB 221 or CHY 251

**Course Typically Offered:** Fall

Credits: 3

### **BMB 441 - Introductory Immunology Laboratory**

A laboratory course to introduce students to diagnostic and experimental techniques routinely used in the immunology lab. Lab 2.

**Prerequisites:** BMB 440 or concurrently.

**Course Typically Offered:** Fall

Credits: 1

### **BMB 455 - Virology**

Introduction to the study of viruses, emphasizing their nature, methods of cultivation, mode of transmission, genetics and mechanisms of pathogenicity. Lec 3.

**Prerequisites:** BMB 300.

**Course Typically Offered:** Variable

Credits: 3

### **BMB 456 - Virology Laboratory**

Introduction to methods of virus propagation, assay and characterization, including cell culture, in vitro infectivity assays, and

cytopathic effects. Lec 3, Lab 2.

**Prerequisites:** BMB 455 or concurrently.

**Course Typically Offered:** Variable

Credits: 1

## **BMB 460 - Advanced Biochemistry**

A continuation of BMB 322, with emphasis on elements of biochemistry and similar topics. May include discussions of cellular control mechanisms, enzyme kinetics. Lec 3.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** BMB 322 or permission.

**Course Typically Offered:** Spring

Credits: 3

## **BMB 464 - Analytical and Preparative Biochemical Laboratory Methods**

Students will experience laboratory techniques for the manipulation and analysis of biochemical materials including biological activity assays, concentration determinations, ligand binding analysis, enzyme kinetics and macromolecular fractionation through a discovery based investigation. The lecture component will focus on principles of techniques, literature investigation, protocol development and data analysis/problem solving. Lec 2, plus Lab 4

**Prerequisites:** BMB 322.

**Course Typically Offered:** Fall & Spring

Credits: 4

## **BMB 467 - Physical Biochemistry**

Designed for students who have a strong background in the properties and function of biomolecules including proteins, nucleic acids, lipids, and carbohydrates. Focus will be on the physical, chemical, and thermodynamic principles that define macromolecular interactions in cells and solution. Topics include thermodynamics of macromolecular systems, bioenergetics, binding, solution behavior, macromolecular interactions, introduction to quantum mechanics, transport, separation techniques, spectroscopy, phase transitions, and steady state and rapid reaction kinetic principles and modern biophysical laboratory techniques.

**Prerequisites:** BMB 460 or concurrently or permission; PHY 122 or 112 or concurrently; and BMB 322 and CHY 252 and MAT

**Course Typically Offered:** Fall

Credits: 3

### **BMB 471 - Cell Culture Laboratory**

A laboratory course devoted to eukaryotic cell culture techniques and applications. Lab 2.

**Prerequisites:** BMB 305.

**Course Typically Offered:** Spring

Credits: 1

### **BMB 490 - Microbial Genetics**

A lecture and laboratory chiefly in the genetics of *Escherichia coli*, its bacteriophages, and mechanisms of genetic exchange among prokaryotes. Lectures cover all materials and problems presented in the text. Laboratory sessions may include chemical mutagenesis, transposon mutagenesis, in vitro mutagenesis, transduction, conjugation, transformation, genetic mapping, physical mapping, complementation analyses, maxi cell expression of proteins, and regulatory studies using gene fusions and operon fusions. Lec 3, Lab 4.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** BMB 464 or permission.

**Course Typically Offered:** Fall

Credits: 5

### **BMB 491 - Biochemistry, Microbiology and Molecular Biology Research**

Research in Biochemistry, Microbiology and Molecular Biology.

**General Education Requirements:** Satisfies the General Education Capstone Experience Requirement.

**Prerequisites:** senior standing or graduate standing.

**Course Typically Offered:** Fall, Spring, Summer

Credits: Ar

### **BMB 497 - Independent Study**

A laboratory and conference for students desiring to pursue some particular line of investigation.

**Prerequisites:** permission.

**Course Typically Offered:** Fall & Spring

Credits: Ar

### **BUA 101 - Introduction to Business**

Covers the basic functional areas of business, including finance, management, marketing management information systems, and accounting. For first-year business majors only.

**Course Typically Offered:** Fall

Credits: 3

### **BUA 201 - Principles of Financial Accounting**

This is an introduction to the organization, presentation and use of financial accounting information. Students will understand the elements of the accounting system - assets, liabilities, equity, revenues, expenses and dividends. Emphasis is on acquiring familiarity with the double-entry system and gaining an understanding of the purposes and uses of the information found within the income statement, balance sheet, statement of stockholder's equity and the statement of cash flows.

**Prerequisites:** Sophomore Standing or Accounting Majors

**Course Typically Offered:** Fall & Spring

Credits: 3

### **BUA 202 - Principles of Managerial Accounting**

This course is an introduction to the use and preparation of accounting information for management decision-making and analysis. It includes techniques that can be used by all businesses in evaluating, planning and controlling operations. The course focuses on how manufacturing costs are accounted for and used to make business decisions, the nature of cost-volume-profit relationships and the contribution margin approach to decision making, preparation and use of budgets and financial statements for a manufacturing company. It includes an introduction to job order and standard costing systems.

**Prerequisites:** BUA 201 with a C- or higher.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **BUA 220 - The Legal Environment of Business**

An examination of fundamental legal concepts and their application to the business community. Considers the evolution of law and its underlying conceptual framework from which legal rules and principles of business develop. Selected legal cases will be critically analyzed and discussed.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and Ethics Requirements. Must be taken in series with BUA 449 to meet Ethics requirement. Neither course alone fulfills the requirement.

**Prerequisites:** Sophomore Standing

**Course Typically Offered:** Fall & Spring

Credits: 3

## **BUA 235 - Information Systems and Technology for Business**

Provides an overview of current and emerging technologies used in organizations today. All business majors should understand the technological infrastructure underlying information systems of the firm including system components, databases, networking, telecommunications, e-commerce and distributed systems. The course focuses on using information systems and technologies to enhance the competitive position of the firm, enabling managers to make better decisions and solve business problems. A minimum grade of C- is required in this course.

**Prerequisites:**

**Course Typically Offered:** Fall & Spring

Credits: 3

## **BUA 267 - Database Management**

Introduction to technical and managerial issues associated with databases. Topics include structured query language (SQL) and database usage in decision making.

**Prerequisites:** Sophomore Standing and BUA 235

**Course Typically Offered:** Fall

Credits: 3

## **BUA 270 - Marketing**

Introduces students to the concepts, analyses, and activities that comprise marketing strategy and tactics, and provides practice in assessing and solving strategic and tactical problems in marketing. The course is a foundation for advanced courses in marketing. Topics include: marketing strategy (segmentation, targeting and positioning), market environmental analysis, consumer behavior, marketing research, product management, pricing, marketing communications, and channels of distribution.

**Prerequisites:** Business, Economics or Financial Economic Major or Declared Business Minor and Sophomore Standing and ECO 120

**Course Typically Offered:** Fall & Spring

Credits: 3

## **BUA 290 - Introduction to Topics in Business**

Introduces students to areas in management, marketing, accounting, finance, entrepreneurship, international business and management of information systems. Special topics may include areas such as business leadership, digital security, financial management, business accounting, teamwork, cloud computing, new global markets, and social media marketing. This course may be repeated for credit.

**Prerequisites:** First-year or Second-year Standing and BUA Major or Minor

**Course Typically Offered:** Alternate Years

Credits: 1-3

## **BUA 301 - Intermediate Accounting I**

An examination of the conceptual framework underlying financial accounting, as well as an in-depth look at accounting for assets and the statement of cash flows. While heavily mechanical, attention will be devoted to the economic environment in which financial accountants work, as well as the incentives and consequences associated with specific accounting choices.

**Prerequisites:** BUA 202, sophomore standing.

**Course Typically Offered:** Fall

Credits: 3



## **BUA 302 - Intermediate Accounting II**

A continuation of BUA 301, this course focuses on the recognition, measurement, and presentation of accounting information related to (among others) investment, general liabilities and contingencies, income taxes, lease obligations, pension liabilities, and equity. It further focuses on the preparation, calculation and interpretation of financial measures including earnings per share.

**General Education Requirements:** Satisfies the Writing Intensive General Education Requirement.

**Prerequisites:** BUA 301; sophomore standing.

**Course Typically Offered:** Spring

Credits: 3

## **BUA 305 - Cost Accounting**

The course includes concepts of cost and overhead allocation, cost systems (activity-based, job order, process, and standard), budgeting, cost behavior and CVP analysis including an introduction to regression using Excel.

**Prerequisites:** Junior Standing and minimum grade of C- in BUA 202.

**Course Typically Offered:** Fall

Credits: 3

## **BUA 310 - Auditing**

This course focuses on conceptual foundation to understand auditing and assurance services. It examines the public accounting profession, auditing standards, and professional ethics. It introduces variety of auditing procedures and the steps that are taken by CPA firms in conducting audits. It also discusses different potential problems that are faced by the auditors in the real audit assignments. The course illustrates auditing with cases. It provides an opportunity for students to study auditing concepts and theory at an advanced level by examining a number of real issues.

**Prerequisites:** BUA 301 and BUA 302.

**Course Typically Offered:** Fall

Credits: 3

## **BUA 312 - Federal Taxation of Individuals**

A study of Federal income tax laws as they affect individuals. Includes a study of principles and concepts of taxation. Various types of income, deduction, credits and gains and losses are covered, including capital gains, income from self-employment, itemized deductions and realized and recognize gains and losses, among others. Emphasis is on tax-planning to minimize taxable income. The effect of the tax laws on individual and small business decision-making is studied. Students learn tax research techniques to help identify tax issues and find solutions to tax problems. This course prepares students for further study in taxation.

**Prerequisites:** BUA 202, junior standing.

**Course Typically Offered:** Fall

Credits: 3

### **BUA 325 - Principles of Management and Organization**

Analysis of the internal organizational structure and the process of management in business enterprises both domestic and international. Focus on concepts, methods, and techniques of planning, organizing, directing, and controlling the functions of the modern manager, and the impact of these processes upon effective interpersonal relations.

**Prerequisites:** ECO 120 and PSY 100 and Sophomore Standing.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **BUA 326 - Organizational Behavior**

Examines the behavior of individuals, groups and organizations. Applies a managerial perspective that considers organizational effectiveness, careers and job satisfaction. Topics include diversity, motivation, organizational communication, team processes and structure, leadership, organizational design, culture and change.

**Prerequisites:** Junior Standing, BUA 325 and PSY 100.

**Course Typically Offered:** Fall

Credits: 3

### **BUA 327 - Business and Society**

Role of business in our society and the interactions it has with various segments of the society. Specific areas examined include the legal environment; social responsibility of business, political, and social forces; and ethical dilemmas that can occur.

**Prerequisites:** BUA 325.

**Course Typically Offered:** Variable

Credits: 3

### **BUA 328 - Canadian/U.S. Business: A Comparison**

A comparative review of the recent history of Canadian-U.S. business relations with primary emphasis on cross-border trade issues and the impact of that bilateral trade on Maine's business environment. Focus on energy, lumber, paper, agricultural products, industrial production, freight/transportation, and foreign investments.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** junior standing.

**Course Typically Offered:** Variable

Credits: 3

### **BUA 330 - Human Resource Management**

The course examines the role of human resource management (HRM) in the context of the overall business strategy. Specifically, the course covers HRM activities including planning, recruitment, selection, training, performance management, compensation, benefits and their alignment with a business strategy. It also considers internal and external factors that impact management of talent in a context of ongoing globalization, workplace diversity and legal compliance.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** ECO 120, ECO 121, and PSY 100, or equivalent or permission; junior standing.

**Course Typically Offered:** Fall

Credits: 3

### **BUA 331 - Labor-Management Relations**

An interdisciplinary survey of the labor-management systems of the private and public sectors. Considers the nature and characteristics of labor-management relations from structural, historical, international, legal, psychological, and economic perspectives.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions Requirement.

**Prerequisites:** junior standing.

**Course Typically Offered:** Variable

Credits: 3

### **BUA 337 - Production and Operations Management**

This course addresses the organizational role of Operations Management as a primary business function. Students are challenged to apply critical thinking skills as well as apply quantitative modes such as: forecasting, scheduling, capacity planning, location analysis, project management, inventory control and statistical process control to generate plausible solutions to operations management problems.

**Prerequisites:** BUA 325, MAT 215 or MAT 232; junior standing.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **BUA 342 - Small Business Management**

Study of how to manage growth oriented small businesses. Drawing on best practices from the literature and case studies, all aspects of running a small business will be considered. These include, but not limited to, marketing, financing, operations, human resources, and managing cash-flows.

**Prerequisites:** Junior or Senior Standing

Credits: 3

### **BUA 343 - Introduction to International Business**

Examines the role of U.S. businesses in the global economy with focus on key concepts and topics in world trade and investments, economic relationships among nations, as well as an understanding of cultural diversities. Provides analyses of problems and opportunities related to establishing, conducting, and maintaining business activities in foreign markets.

**Prerequisites:** Business, Economics or Financial Economics Major or Business Administration or Management Minor and Junior Standing and ECO 120 and ECO 121

**Course Typically Offered:** Fall & Spring

Credits: 3

### **BUA 344 - Entrepreneurship and New Venture Creation**

Develop an understanding of entrepreneurship theory and the relationship between entrepreneurial firms and the broader business environment. Entrepreneurship focuses on new venture creation of high growth potential ventures through incremental or radical innovation. This course is for students interested in entrepreneurship practice and those interested in pursuing entrepreneurial opportunities.

**Prerequisites:** Junior Standing, BUA 201, and BUA 325.

**Course Typically Offered:** Fall

Credits: 3

### **BUA 350 - Business Finance**

Introduces the principles of finance including time value of money, security valuation, capital budgeting and measurement of risk. Emphasis is on financial decision-making in the corporate environment.

**Prerequisites:** BUA 201, ECO 120 and ECO 121; junior standing.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **BUA 351 - Valuation and Corporate Investment Decisions**

A course in advanced corporate finance with a focus on project and enterprise valuation. Students explore advanced issues in capital budgeting and explore in depth the financing decisions of the corporation, which include raising capital both privately and publicly. Other important topics may be introduced such as a capital structure and dividend policy. Includes case studies.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** BUA 350.

**Course Typically Offered:** Spring

Credits: 3

### **BUA 352 - Financial Institutions**

Analyzes the operations and economic roles of financial institutions, including commercial, savings and investment banks. Particular attention is paid to the changing nature of this industry, regulation and deregulation and management of risk.

**Prerequisites:** BUA 350; junior standing.

**Course Typically Offered:** Fall

Credits: 3

### **BUA 353 - Investment Strategy**

Examines the construction and management of investment portfolios.

**Prerequisites:** BUA 350.

**Course Typically Offered:** Fall

Credits: 3

### **BUA 363 - Network Design and Applications**

Introduces the design, management and strategic use of information systems in networked environments. Topics include telecommunications, network architecture, security, distributed processing and the Internet.

**Prerequisites:** BUA 235

**Course Typically Offered:** Spring

Credits: 3

### **BUA 367 - Database for Decision Making**

Introduction to technical and managerial issues associated with databases. Topics include structured query language (SQL) and database usage in decision making. Because of content overlap, BUA 367 and BUA 364 may not both be taken for degree credit.

**Prerequisites:** BUA 235

**Course Typically Offered:** Fall & Spring

Credits: 3

### **BUA 371 - Services Marketing**

An in-depth examination of the marketing of services and the role of services in supporting the marketing of tangible products. The distinction between the marketing of tangibles and intangibles will be stressed. The course will identify and examine the

distinct issues which are encountered in the marketing of services and will explore appropriate strategies for implementing services marketing programs, primarily in services organizations (i.e. healthcare, tourism, banking, education, etc.). Specifically, the course will examine, in detail, the role of people in delivering services, the importance of service quality as a strategic differentiating tool, and the importance of collaboration between marketing and human resources management in the delivery of services.

**Prerequisites:** BUA 270

**Course Typically Offered:** Spring

Credits: 3

### **BUA 372 - Intergrated Marketing Communication**

This course is designed for students who want to understand integrated marketing communications and how all forms of communications work to achieve organizational objectives and contribute to the "brand." It examines a wide range of consumer/customer communications-advertising, public relations, promotion, Internet, direct marketing, digital and social media, event marketing, point-of purchase, and other alternative media.

**Prerequisites:** BUA 270.

**Course Typically Offered:** Variable

Credits: 3

### **BUA 374 - Personal Selling and Sales Management**

An overview of professional selling, with an emphasis on the sales process, and an understanding of sales management. It is designed for the student to gain a greater appreciation, understanding, and respect for sales, especially the concept of relationship selling, and the techniques, policies and challenges involved in managing a sales force. The student will also gain a better understanding of how sales fits into the overall marketing function and the organization as a whole.

**Prerequisites:** BUA 270.

**Course Typically Offered:** Variable

Credits: 3

### **BUA 375 - Retail Management**

An introduction to the strategies and tactics of retail management from a marketing management perspective.

**Prerequisites:** BUA 270.

**Course Typically Offered:** Variable

Credits: 3

### **BUA 376 - International Marketing**

Focuses on marketing principles and strategies valuable to the successful conduct of international business operations. Differing business environments will be examined in order to sensitize students to necessary adjustments in marketing strategies.

**Prerequisites:** BUA 343 and BUA 270; junior standing.

**Course Typically Offered:** Fall

Credits: 3

### **BUA 378 - Marketing Research**

Considers marketing research as a tool for marketing decision making. Emphasis on problem formulation, research design, research methodology, sampling, data analysis and interpretation.

**Prerequisites:** BUA 270, MAT 215 or MAT 232; junior standing.

**Course Typically Offered:** Fall

Credits: 3

### **BUA 382 - Consumer Behavior**

This course presents a comprehensive framework for understanding why and how people consume. It investigates the pre-purchase, purchase and post-purchase stages of the consumption process. It draws on the social sciences to understand the psychological, situational, technological, social and cultural factors influencing the consumption process. Specific topics include perception, motivation, attitudes, values, self-concept, personality, lifestyle, consumer decision-making process, shopping and buying, group influences, consumption subcultures, and global consumer culture.

**Prerequisites:** BUA 270.

**Course Typically Offered:** Spring

Credits: 3

### **BUA 396 - Field Experience/Internship**



Students may earn from one to six credit hours for a pre-planned, supervised field experience in business relevant to the student's educational development and career goals. Credit will not be awarded for work experience acquired prior to registration for this course.

(Pass/Fail Grade Only.)

**Prerequisites:** Business majors only with 2.50 grade point average or better; junior standing and permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1-6

### **BUA 400 - Introduction to Accounting**

An accelerated course, students will understand the elements of the accounting system - assets, liabilities, equity, revenues, expenses and dividends. Emphasis is on acquiring familiarity with the double-entry system and gaining an understanding of the purposes and uses of the information found within the income statement, balance sheet, statement of stockholder's equity and the statement of cash flows. It includes concepts of cost, cost systems and budgeting.

**Prerequisites:** Pre-MBA students only, permission of the Director of the MBA Program.

**Course Typically Offered:** Spring, Summer

Credits: 3

### **BUA 406 - Advanced Managerial Accounting**

This course is a continuation of BUA 305, focusing on contemporary management accounting tools such as Strategic and Activity Based Management, Lean Accounting, the Balanced Scorecard, Productivity Measurement and Control, Quality and Environmental Costing, JIT Inventory Management and the Theory of Constraints.

**Prerequisites:** BUA 305; junior standing. Graduate business students can take the course with permission of the instructor.

**Course Typically Offered:** Spring

Credits: 3

### **BUA 409 - Accounting for Governmental and Not-For-Profit Entities**

Financial accounting for not-for-profit and governmental entities and hospitals, voluntary health and welfare organizations. Includes fund accounting. GASB statements. (This course is identical to PAA 409. Students cannot receive credit for both PAA 409 and BUA 409.)

**Prerequisites:** BUA 201; junior standing.

**Course Typically Offered:** Variable

Credits: 3

### **BUA 445 - International Management**

Examines the management of the multinational corporation (MNC). Topics include motivations to internationalize, MNC types, strategy, structure and processes. Analysis of the competitive environment and alliances. Cross-cultural adjustment. Relies extensively on real-life business cases.

**Prerequisites:** BUA 325 and BUA 343.

**Course Typically Offered:** Spring

Credits: 3

### **BUA 449 - Strategic Management**

BUA 449 is the capstone course for the undergraduate business major. It requires that the student draw together the knowledge gained in all core business coursework in the analysis of contemporary challenges facing business organizations. Students are required to demonstrate their ability to interconnect these topics using strategic management skills and analytical tools. Proficiency is shown via written and oral communications in individual and team based activities through in-depth analysis of increasingly complex business and not for profit organizational problems. This necessarily involves decision making and an understanding of ethical principles and approaches.

**General Education Requirements:** Satisfies the General Education Ethics and Capstone Experience Requirements. Must be taken in series with BUA 220 to meet Ethics requirement. Neither course alone fulfills the requirement. It is expected that students take this course in their last semester.

**Prerequisites:** Senior standing Business Administration majors, BUA 325 & BUA 350 & BUA 270. Not open to Graduate Students and may not be taken for graduate credit.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **BUA 454 - Financial Derivatives**

Examines the practices of futures, options and swaps markets, particularly the economic function of these markets and their application in banking, portfolio management, international finance and individual investment programs.

**Prerequisites:** BUA 350. Junior Standing.

**Course Typically Offered:** Spring

Credits: 3

## **BUA 455 - International Corporate Finance**

Applies the concepts and principles of corporate finance to the multinational corporation. Focuses on gaining an understanding of the international financial environment, the measurement and management of foreign exchange risk, global financing activities and foreign direct investment.

**Prerequisites:** BUA 343, BUA 350.

**Course Typically Offered:** Fall

Credits: 3

## **BUA 460 - Leadership**

Students will examine various perspectives of leadership theory and practice in business settings. Topics include leadership and teambuilding, culture, communication, decision making, crisis, self-awareness, ethics, creating a vision, and styles of leadership.

**Prerequisites:** Senior Status, at least a C in BUA 325

**Course Typically Offered:** Fall

Credits: 3

## **BUA 468 - Electronic Business**

Electronic business has emerged as critical to the business environment and to maintain a competitive advantage in dynamic markets. Technology-enabled business trends have profoundly reshaped the business environment. The transformation of businesses to be technologically competitive in the 21st century include major software systems like customer relationship management, supply chain management, big data, cloud technologies, and the Internet of all things that enable businesses to improve their efficiencies as well as their ability to track and use analytics and understand customer needs in real time. This course provides students with the knowledge and skills to understand the digital technologies necessary for productivity gains, customer knowledge and competitive advantage and represents the culmination and integration of prior knowledge gained in the business and MIS curriculum.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** Prerequisites: Junior standing, BUA 267 and BUA 363 or permission.

**Course Typically Offered:** Spring

Credits: 3

### **BUA 480 - Managerial Marketing**

Emphasizes the integration of marketing, as an organization activity, with other activities of the business firm. Explores problems encountered by top marketing executives in modern business.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** BUA 378 or BUA 382 or by instructor permission.

**Course Typically Offered:** Spring

Credits: 3

### **BUA 490 - Special Topics in Business Administration**

Study of various aspects of functional areas of accounting, finance, management, marketing, decision sciences, international business and other business-related topics. Topics vary depending on faculty and student interests. May be repeated for credit if the topics differ.

**Prerequisites:** Junior standing and permission.

**Course Typically Offered:** Fall & Spring

Credits: 1-3

### **BUA 498 - Independent Study for Undergraduate Study**

Provides an opportunity for well-qualified students to pursue a selected topic in great depth under the supervision of an individual faculty member. Topic to be determined in consultation with instructor. May be repeated for credit.

**Prerequisites:** Senior standing, a cumulative GPA of at least 3.5 and permission of the Associate Dean of the College of Business, Public Policy and Health.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **CAN 101 - Introduction to Canadian Studies**

Acquaints students with varied aspects of the Canadian experience: society, culture, history, native peoples, environment, education, technology, economy and diplomacy. Participating faculty include Canadian-American Center staff, visiting scholars from Canada and the United States, and faculty members from UM Colleges. Course includes an optional field trip to Canada.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** First-year student or sophomore standing.

**Course Typically Offered:** Fall

Credits: 3

### **CAN 401 - Readings in Canadian Studies**

An independent reading course examining issues and problems not studied in regular offerings. The course is arranged between the student and a Canadian Studies faculty member.

**Prerequisites:** CAN 101 plus 6 hours of core courses in Canadian Studies or permission.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **CET 100 - Introduction to Construction Management**

An introductory study of the construction process and civil engineering technology. Topics include CMT program, project life cycle, estimating, scheduling, design, contracting and ethics and construction overview. Field trips. LAB 3.

**Course Typically Offered:** Fall

Credits: 1

### **CET 101 - Plane Surveying**

A beginning course studying surveying instruments and their use in the measurement of angles, distances and elevations. Also includes mathematics, computational methods, adjustments and measurement analysis used in plane surveying. (Fall and Spring.)

**Prerequisites:** SET and College of Engineering Students or Permission.

**Corequisites:** MAT 122

**Course Typically Offered:** Fall & Spring

Credits: 3

## **CET 120 - Technical Drawing**

An introduction to graphic symbols utilizing both manual and CADD skills applied to engineering drawings. Topics include: lettering, geometric construction, multiview drawing, sections, dimensioning and assembly drawing. Lec 2, Lab 2.

**Prerequisites:** Construction Management Technology Majors

**Course Typically Offered:** Fall

Credits: 3

## **CET 130 - Building Construction**

A study of common building structural systems, materials, methods and components with an introduction to plan reading. An introduction to the determination of the quantity of building materials from design drawings and specifications.

**Prerequisites:** None.

**Course Typically Offered:** Spring

Credits: 3

## **CET 202 - Construction Surveying**

Study of surveying procedures in construction. Includes volume computations, horizontal curves, compound curves, reverse curves, vertical curves, stakeout, grade layout, profile and cross sections. Instrument experience is emphasized using total stations, laser levels and G.P.S. Lec 2, Lab 2. (Fall.)

**Prerequisites:** CET 101, COS 103 and TME 152.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **CET 221 - Construction Methods**

A study in construction operations. Topics include: earthwork equipment and operations; excavations and foundations; wood, reinforced concrete, masonry, structural steel construction; mechanical and electrical systems; construction TQM; QC-QA. Lec 3. (Spring.)

**Course Typically Offered:** Spring

Credits: 3

### **CET 224 - Construction Safety**

An introduction to safety on the construction site to include safety measures, training, responsibility for safety, accident investigation and pertinent regulations (OSHA and state). Will also look at the effect of safety on worker's compensation, liability, employee behavior and time management. Lec 1. (Spring.)

**Course Typically Offered:** Spring

Credits: 1

### **CET 228 - Plan Reading & Analysis**

This course will provide an overview of plan reading by covering views, scales, lines, and symbols, abbreviations, as well as the various plan views, elevations, and section and details. Lecture 0, Lab 2.

**Prerequisites:** CET 130 or permission

**Course Typically Offered:** Spring

Credits: 1

### **CET 326 - Soil Mechanics and Foundations**

Introduction to the physical properties of soil important to the construction industry. Includes classification systems, drainage, frost action, slope stability and shallow foundations. Lec 3. (Fall.)

**Prerequisites:** CIE 110 and CIE 111. Prerequisite or Corequisite: CET 327.

**Corequisites:** Prerequisite or Corequisite: CET 327.

**Course Typically Offered:** Fall

Credits: 3

## **CET 327 - Soil Mechanics and Foundations Laboratory**

Covers standard soils tests that are important to the construction industry. Lab 2.

**Prerequisites:** CIE 110 and CIE 111. Prerequisite or Corequisite: CET 326.

**Corequisites:** Prerequisite or Corequisite: CET 326.

**Course Typically Offered:** Fall

Credits: 1

## **CET 332 - Civil Engineering Technology**

Topics related to civil engineering site work. Covers on-site septic systems, drainage, hydrology, hydraulics, public sewer system design, water system design, erosion control, sedimentation control, pumps, culverts and conduits. Lec 3, Lab 1. (Spring.)

**Prerequisites:** CET 202, or concurrently.

**Course Typically Offered:** Spring

Credits: 3

## **CET 356 - Construction Documents and Administration**

A study of documents and administrative procedures relevant to construction and contract administration. Topics include bidding, letters of credit, addenda, claims, inspections, reporting, operations, payments and defaults. Lec 2, Lab 2. (Fall.)

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** CET 221, CET 224.

**Course Typically Offered:** Fall

Credits: 3

## **CET 360 - Construction Estimating and Bidding**

A study in the estimating and bidding processes for construction projects. Topics include: budgetary, parametric and detailed cost estimating for residential, commercial, heavy highway and industrial construction projects. Manual, computer assisted and estimating software is utilized to prepare construction cost estimates; bid preparation and submittal: project budget preparation. Lec 2, Lab 2. (Spring.)



**Prerequisites:** CET 221.

**Course Typically Offered:** Spring

Credits: 3

### **CET 394 - Construction Management Technology Practice**

Cooperative work experience at full-time employment for at least a continuous 10 week period. (Summer.)  
(Pass/Fail Grade Only.)

**Prerequisites:** Junior or senior standing in Construction Management Technology.

**Course Typically Offered:** Summer

Credits: 3

### **CET 412 - Sustainable Population and Environmental Design and Construction**

This course provides instruction in Leadership in Energy and Environmental Design (LEED), green building design, environmental favorability rating, and progressive leadership toward the goal of reducing the population footprint (i.e., development sprawl and resource consumption) through innovative construction practices.

**Prerequisites:** Junior Standing.

**Course Typically Offered:** Fall

Credits: 3

### **CET 413 - Statics and Strength of Materials**

The study of the equilibrium of structural systems and the stresses and strains that occur in structural members. Provides the knowledge of structural analysis required as a prerequisite to CET 414. (Fall.)

**Prerequisites:** COS 103, PHY 107, and TME 253.

**Course Typically Offered:** Spring

Credits: 4

### **CET 414 - Structural Design**

Design of structural members in steel, wood and reinforced concrete. Covers building code requirements for dead, live and snow loads. Lec 3, Rec 2. (Spring.)

**Prerequisites:** CET 130 and CET 413.

**Course Typically Offered:** Fall

Credits: 4

## **CET 451 - Construction Law**

Studies the fundamental legal concepts and the development and application of law on society, business, engineering and construction. Covers legal structure, business entities, agency, mechanics liens, torts, bonding, contract administration, contracts, contract formation, contract codification, liability, indemnification, warranties, remedies, damages, the uniform commercial code, alternate dispute resolution, international law, legal research, and land use restrictions. Lec 3. (Fall.)

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and Writing Intensive Requirements.

**Prerequisites:** ENG 317 or concurrently.

**Course Typically Offered:** Fall

Credits: 3

## **CET 455 - Construction Engineering Fundamentals**

The course introduces topics in the Civil Discipline Fundamentals of Engineering (FE) examination that are not otherwise covered in the Construction Management Technology (CMT) program. Civil Discipline FE Exam topics that are covered in the CMT program are reviewed. The course consists of lecture with problem solving similar to the format used on the FE exam. Significant portions of the course may be delivered online.

**Prerequisites:** Senior standing in Construction Management Technology or permission.

**Course Typically Offered:** Spring

Credits: 3

## **CET 458 - Management of Construction**

The capstone course for Construction Management Technology (CMT) program. Principles and applications taught throughout the CMT program are used by students during a construction project simulation that covers many facets of construction management, engineering and business that are encountered in practice. Format varies. In addition, cost to cost, percentage

complete accounting is covered. Lec 3. (Spring.)

**General Education Requirements:** Satisfies the General Education Capstone Experience Requirement.

**Prerequisites:** BUA 201, CET 326, CET 332, CET 356, CET 414, CET 451, CET 462.

**Course Typically Offered:** Spring

Credits: 3

### **CET 462 - Construction Planning and Scheduling**

A study of design and analysis of construction planning and scheduling for construction projects. Manual and computer assisted procedures are used, as well as, industry software to solve construction scheduling problems, such as resource constraints and limitations. Project control systems are also studied. Lec 2, Lab 2. (Fall.)

**Prerequisites:** Prerequisite or Corequisite: CET 360

**Course Typically Offered:** Fall

Credits: 3

### **CET 498 - Selected Topics in Construction Management Technology**

Topics in Engineering Technology not regularly covered in other courses. Content varies to suit individual needs. May be repeated for credit. (Fall and Spring.)

**Prerequisites:** junior or senior standing; permission of instructor.

**Course Typically Offered:** Fall & Spring

Credits: Ar

### **CHB 111 - Introduction to Chemical Engineering and Bioengineering I**

An introduction to the professions of chemical engineering and bioengineering through a series of speakers, tours, presentations and projects. The development of teaming and oral presentation skills are emphasized. Lec 2. (Fall.)

**General Education Requirements:** Together with CHB 477, CHB 479, & CHB 493, this course satisfies the General Education Ethics requirement.

**Prerequisites:** First-year students only.

**Course Typically Offered:** Fall

Credits: 2

## **CHB 112 - Introduction to Chemical Engineering and Bioengineering II**

Introduction to the application of computers to solving chemical engineering and bioengineering problems. Commercial and public domain computer software for data acquisition, analysis, and graphical representation, as well as database searching, will be introduced. The application of these programs to both chemical engineering and bioengineering problem solving will be introduced through a series of analysis and design projects. Lec 1, Rec 2. (Spring.)

**Prerequisites:** MAT 126 or permission.

**Course Typically Offered:** Spring

Credits: 2

## **CHB 350 - Statistical Process Control and Analysis**

The basics of statistics and statistical process control and systems optimization will be investigated.

**Prerequisites:** MAT 127 or permission of instructor.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **CHB 361 - Chemical Engineering and Bioengineering Laboratory I**

Applies the principles of chemical engineering unit operations and process control in the laboratory, using pilot scale equipment. Applies the principles of bioengineering in the laboratory using analogs of biological systems and appropriate instrumentation. An emphasis is placed on formal written and oral reports. Lab 4. (Spring (chemical and bioengineering) and Summer (chemical engineering only)).

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** For Chemical Engineering majors; CHE 352 and CHE 360 or permission. For Bioengineering majors; BLE 201 and BLE 202 or permission.

**Course Typically Offered:** Spring, Summer

Credits: 3

## **CHB 363 - Chemical Engineering and Bioengineering Laboratory II**

Applies the principles of chemical engineering unit operations and process control in the laboratory, using pilot scale equipment. Applies the principles of bioengineering in the laboratory using analogs of biological systems and appropriate instrumentation. An emphasis is placed upon formal written and oral reports. Lab 4, Rec 1. (Fall.)

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** CHE 361 and (Chemical Engineering major, CHE 362, CHE 368) or (Bioengineering major, BLE 401, BLE 402, BLE 403) or permission.

**Course Typically Offered:** Fall

Credits: 3

## **CHB 460 - Biochemical Engineering**

Application of chemical engineering principles to systems utilizing micro organisms, tissue culture and enzymes for processing. Applications to food, pharmaceutical and fermentation industries will be discussed. No previous background in biological sciences required. Lec 3. (Fall.)

**Prerequisites:** CHE 368 or permission.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **CHB 477 - Elements of Chemical Engineering and Bioengineering Design**

Introduction to chemical engineering and bioengineering design and economics. Considers principles of design, process flow diagrams, heat and material balances, rate equations, transport phenomena, materials compatibility, material selection, and cost estimating techniques as well as principles of engineering economics involving time value of money, taxes, depreciation, profitability indicators, alternative investment and optimization. Lec 3. (Fall.)

**General Education Requirements:** Together with CHB 111, CHB 493, & CHB 479, this course satisfies the General Education Ethics requirement.

**Prerequisites:** For Chemical Engineering Majors, CHE 360 and CHE 362. For Bioengineering majors, BLE 401 and BLE 402 and BLE 403.

**Course Typically Offered:** Fall

Credits: 3

## **CHB 479 - Chemical Engineering and Bioengineering Design Projects**

Application of engineering principles to the solution of complex, open-ended, design problems involving feasibility, analysis, design and optimization of chemical or biological systems, processes, instrumentation and techniques. Emphasis on oral and written communications and working in small design groups. Rec 1, Lab 3. (Spring.)

**General Education Requirements:** Satisfies the General Education Capstone Experience requirement. Together with CHB 111, CHB 493, & CHB 477, this course satisfies the General Education Ethics requirement.

**Prerequisites:** CHB 477.

**Course Typically Offered:** Spring

Credits: 4

## **CHB 493 - Chemical Engineering and Bioengineering Seminar**

Discussion of recent developments in both the chemical engineering and bioengineering fields, in addition to related fields. (Fall and Spring.)

**General Education Requirements:** Together with CHB 111, CHB 477, & CHB 479, this course satisfies the General Education Ethics requirement.

**Prerequisites:** Senior standing in Chemical Engineering or Bioengineering, or permission.

**Course Typically Offered:** Fall & Spring

Credits: 0-1

## **CHB 494 - Chemical Engineering and Bioengineering Practice**

A cooperative work experience in a commercial operation of the chemical process industry. A cooperative work experience in an industrial, non-profit, government, medical or academic environment in Bioengineering. May be repeated for credit to a maximum of 8 credit hours. (Offered by arrangement.)  
(Pass/Fail Grade Only.)

**Course Typically Offered:** Fall, Spring, Summer

Credits: Ar

## **CHB 499 - Undergraduate Thesis**

Original investigation of a chemical engineering or bioengineering problems. The topic must be chosen prior to the senior year. A committee of at least three faculty members will supervise the thesis and its defense. Maximum of 3-6 accumulated credit hours. (Offered by arrangement.)

**Prerequisites:** Permission.

**Course Typically Offered:** Fall & Spring

Credits: Ar

## **CHE 200 - Fundamentals of Process Engineering**

Formulation of the zeroth and first laws of thermodynamics and applications to material and energy balances for closed and open systems; PVT behavior of matter; heat capacity and heat of reactions; applications to systems with chemical reactions; integration of basic mathematical, chemical and physical concepts into chemical engineering practice; discussions of the chemical processing industry and the history of thermodynamics. Lec 4. (Fall.)

**Prerequisites:** CHY 122, MAT 126 and PHY 121 or permission.

**Course Typically Offered:** Fall

Credits: 4

## **CHE 352 - Process Control**

Process dynamics described by ordinary differential equations and by linearized approximations. Covers solution of system equations by the use of Laplace transforms, concepts of feedback control, process dynamics and closed loop system analysis. Lec 3. (Fall and Summer.)

**Prerequisites:** MAT 258 or MAT 259 or permission.

**Course Typically Offered:** Fall & Summer

Credits: 3

## **CHE 360 - Elements of Chemical Engineering I**

Introduction to rate operations, stage operations, and the principles of molecular and turbulent transport of mass, momentum, and energy including application of these principles to chemical engineering unit operations. Lec 4. (Fall and Summer.)

**Prerequisites:** CHE 200 or permission.

**Course Typically Offered:** Fall & Summer

Credits: 4

## **CHE 362 - Elements of Chemical Engineering II**

A continuation of CHE 360. Unit operations with emphasis on equilibrium stage operations involving interphase mass transfer - absorption, distillation, extraction leaching plus selected other topics such as drying, absorption and filtration. Lec 4. (Spring and Summer.)

**Prerequisites:** CHE 360 or permission.

**Course Typically Offered:** Spring, Summer

Credits: 4

## **CHE 368 - Kinetics and Reactor Design**

The analysis and design of chemical reactors. The fundamental principles of chemical kinetics and of heat and mass transfer are applied to various types of chemical reactors. Lec 3. (Spring and Summer.)

**Prerequisites:** CHE 200 or permission.

**Course Typically Offered:** Spring, Summer

Credits: 3

## **CHE 385 - Chemical Engineering Thermodynamics I**

Applications of the first and second laws of thermodynamics to the analysis of systems of interest to chemical engineers. Topics include state equations for both ideal and real gases, heat and energy relationships in chemical reactions, elementary phase equilibria, and simple heat and power cycles. Lec 3. (Spring.)

**Prerequisites:** CHB 200 and MAT 228 or permission.

**Course Typically Offered:** Spring

Credits: 3

## **CHE 386 - Chemical Engineering Thermodynamics II**



A continuation of CHE 385. Emphasis on homogeneous mixtures, multi-component vapor-liquid equilibria, chemical reaction equilibria and the thermodynamic analysis of chemical processes. Lec 3. (Fall and Summer.)

**Prerequisites:** CHE 385 or permission.

**Course Typically Offered:** Fall & Summer

Credits: 3

### **CHE 410 - Advanced Materials**

Covers the basic structure, processing and properties of metals, polymers and ceramics and stresses the application of chemical engineering principles to the problems of materials fabrication with emphasis on emerging technologies such as chemical vapor deposition (CVD). Lec 3. (Fall.)

**Prerequisites:** CHY 122, MAT 126 and PHY 122 or permission.

**Course Typically Offered:** Fall

Credits: 3

### **CHE 420 - Colloid Technology**

Designed to familiarize students with the fundamentals of colloid and surface chemistry from various types of colloids and colloidal phenomena, commonly encountered in chemical process industry and classical and modern measurement techniques to applications of colloids and surface chemistry. Lec 3. (Offered every other year, spring only.)

**Prerequisites:** CHE 385 or CHY 471 and MAT 127 or permission.

**Course Typically Offered:** Variable

Credits: 3

### **CHE 430 - Introduction to Polymer Science and Technology**

Concept of macromolecules and synthesis of polymers from monomers. Step-growth and addition polymerization. Polymer structure, molecular size and shape and characterization techniques. Polymer solutions and phase equilibria. Solid state properties. Polymer morphology and transitional phenomena. Crystalline and amorphous states. Glassy, rubbery and viscous behavior. Rheological aspects. Viscoelasticity. Survey of commodity thermoplastics, engineering polymers and uses. Polymer additives and blends. Basic processing techniques. Lec 3. (Spring.)

**Prerequisites:** CHY 122 and CHY 251 or permission.

**Course Typically Offered:** Spring

Credits: 3

### **CHE 461 - Combustion and Fuel Processing**

The aim of the course is to provide the scientific and practical background for the operation of combustion systems and for combustion gas pollution abatement. New developments as a result of the availability of new biofuels and combustion technologies will be outlined. Conversion of fossil fuels and biomass into heat, steam, power, transportation fuels, and chemicals will be describe with the emphasis on mass and energy balances.

**Prerequisites:** CHY 121 and MEE 230 or CHE 385 or MET 233 or MET 433.

Credits: 3

### **CHE 478 - Analysis, Simulation and Synthesis of Chemical Processes**

Covers three areas: process analysis, steady state process simulation and process synthesis. Analysis of process flowsheets to understand material flows, unit operation function and interactions between units. Simulation and design of unit operations and complete chemical processes using process simulation software. Synthesis of chemical processes including chemical reactor and separation system configuration based on heuristic methods. Lec 3. (Fall.)

**Prerequisites:** CHE 360, CHE 362, CHE 368 and CHE 386 or permission.

**Corequisites:** CHE 477.

**Course Typically Offered:** Fall

Credits: 3

### **CHE 497 - Independent Study**

Individual, independent study of a specialized topic under supervision of an advisor and at least one other faculty member. A formal report is required upon completion of the study. Maximum of 3 accumulated credit hours. (Fall, Spring and Summer.)

**Prerequisites:** CHE 477 and CHE 478 or permission.

**Course Typically Offered:** Fall & Spring

Credits: Ar

### **CHE 498 - Special Topics in Chemical Engineering**

Class work in selected subjects in the field of chemical engineering, or related areas of science and technology, not covered in other courses. May be repeated for credit. (Offered by arrangement.)

**Prerequisites:** permission.

**Course Typically Offered:** Fall & Summer

Credits: 1-3

### **CHF 200 - Family Interaction**

Interpersonal dynamics of dating, courtship, mate selection, and the development of family life. Changing patterns of personal interactions within the family life cycle and a pluralistic society.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions Requirement.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **CHF 201 - Introduction to Child Development**

Influences on human development from conception through middle childhood. Theoretical perspectives, empirical evaluation and practical implications.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions Requirement.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **CHF 203 - Practicum in Early Childhood Programs**

Introductory practicum combining child development and education theory with supervised weekly participation in the Child Development Learning Center. Focuses on the child under six years of age. Lab 2.

**Prerequisites:** CHF 201 and Permission of Instructor.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **CHF 303 - Infant/Toddler Care and Development**

Examines issues related to quality care and early education for children ages 0-3. Emphasis on family diversity and inclusion integrated in course material. Includes six hours of lab observation.

**Prerequisites:** CHF 201

**Course Typically Offered:** Fall & Spring

Credits: 3

### **CHF 304 - Practicum in Early Childhood Education K-3**

Students will apply principles of child development to the education of children in grades K-3. Emphasis is placed on identifying scientifically-based practices and techniques associated with exemplary early childhood education programs. Skills in child observation, developing and modifying a range of approaches to instruction, child guidance, and family involvement in schools will be addressed in a participatory class and supervised field placement.

**Prerequisites:** CHF 201, CHF 203 and permission.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **CHF 311 - Creativity and the Young Child**

Exploration of theoretical and research evidence pertaining to the nature of creativity and the conditions requisite for its expression. Includes developmental stages, strategies, materials and workshops in specific areas including children's art, music, creative movement, story telling, play and creative dramatics.

**Prerequisites:** CHF 201.

**Course Typically Offered:** Variable

Credits: 3

### **CHF 321 - Curriculum and Methods for Teaching Young Children Science**

Applies developmental theory to the construction of curriculum and methods in early childhood education. Students explore a range of curriculum models, approaches and strategies as they learn to apply theory to meeting children's learning needs individually and in groups. Topics including role of teachers in promoting learning, assessment, documenting learning, inclusion and family involvement are stressed. Science serves as the content anchor for discussing curriculum and methods issues.

**Prerequisites:** CHF 201, CHF 203.

**Course Typically Offered:** Fall

Credits: 3

### **CHF 322 - Curriculum and Methods for Teaching Social Studies**

Students will develop integrated curriculum focusing on social studies for young children. Issues of inclusion, assessment, and family involvement are integrated into class content to promote social competence in young children.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** CHF 201, CHF 203.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **CHF 329 - Curriculum and Methods for Teaching Young Children Math**

Presents activities and instruction to support candidates' lesson planning and assessment in math for teaching young children.

**Prerequisites:** CHF 201, CHF 203.

**Course Typically Offered:** Spring

Credits: 3

### **CHF 331 - Cognitive Development**

Introduction to the developmental processes involved in the acquisition, organization and processing of information, with an emphasis on the period between infancy and adolescence. Discussion of current theories and research on cognitive, memory and language development and their applications and implications for teaching and parenting.

**Prerequisites:** CHF 201, PSY 100.

**Course Typically Offered:** Spring

Credits: 3

## **CHF 351 - Human Sexuality**

Discusses sexuality and its social implications against a background of constantly changing sexual mores, sex role development, alternative conceptualizations of sexuality, and implications for future trends in human interaction.

**General Education Requirements:** Satisfies the General Education Ethics and Social Contexts and Institutions Requirements.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

## **CHF 381 - Family Resource Management**

Analysis of the managerial process and its relationship to decision making. Emphasis on the use of resources including time, energy, and money to attain family goals.

**Course Typically Offered:** Variable

Credits: 3

## **CHF 385 - Personal and Family Finance**

Influence of outside economic conditions and personal circumstances on family financial problems. The management process applied to family problems involving finances, economic position, meeting living costs, protection against financial contingencies, credit, developing a savings and investment program.

**Course Typically Offered:** Variable

Credits: 3

## **CHF 401 - Peer Education**

Students are trained in the realities and consequences of critical social issues college students face and provide workshops on responsible behavior to campus and community groups.

**Prerequisites:** CHF 351 and permission.

**Course Typically Offered:** Fall

Credits: 3

### **CHF 404 - Selected Topics in Child Development and Family Life**

Review of specific subject areas in the field. Subject areas vary by semester. May be repeated for credit.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **CHF 406 - Introduction to Research Methods in Child Development and Family Relations**

An overview of research methods applicable to the study of children and families. An in-class research project is completed. (This course is identical to HUD 556.)

**Prerequisites:** CHF 200 and CHF 201, or Human Development Graduate students.

**Course Typically Offered:** Fall, Odd Years

Credits: 3

### **CHF 409 - Special Problems in Child Development and Family Life**

As available.

**Prerequisites:** permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: Ar

### **CHF 417 - Introduction to Leadership in Early Childhood Education**

Focuses on topics and issues relevant to becoming a leader in an early childhood organization, best practice in business, developing skills in supervising and working with a variety of staff, understanding and advocating for children and families, and collaborating with other agency personnel.

**Prerequisites:** CHF 201 and CHF 203.

**Course Typically Offered:** Variable

Credits: 3

## **CHF 421 - Student Teaching in Early Childhood**

Supervised student teaching in pre-kindergarten and K-3 settings. (Pass/Fail Grade Only.)

**Prerequisites:** Teacher candidacy, senior standing, Child Development and Family Relations major; permission.

**Course Typically Offered:** Fall & Spring

Credits: 12

## **CHF 422 - Field Placement in Early Childhood Education**

Individual study in selected early childhood settings such as Pre-K classrooms or home visiting programs. Includes developmental assessments, planning and implementation of education programs.

**Prerequisites:** Junior, Senior or Graduate Standing and permission of instructor

**Course Typically Offered:** Fall & Spring

Credits: 3-6

## **CHF 423 - Professional Seminar in Child Development and Family Relations**

An integrated examination of career-related roles, ethics, and responsibilities in research and service to individuals and families.

**General Education Requirements:** Satisfies the General Education Writing Intensive and Capstone Experience Requirements.

**Prerequisites:** Child Development and Family Relations major; senior standing.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **CHF 424 - Professional Seminar for Early Childhood Specialists**

Examination of issues such as ethics, advocacy, collaborating with families and other professionals and professional development.

**General Education Requirements:** Satisfies the General Education Capstone Experience Requirement.

**Prerequisites:** Permission.



**Corequisites:** CHF 421

**Course Typically Offered:** Fall & Spring

Credits: 3

### **CHF 431 - Parenting**

Parent behavior and the dynamics of parenthood are studied. Emphasis on interpersonal, familial, and societal roles of parents, and factors influencing role behaviors and expectations.

**Prerequisites:** CHF 200, CHF 201.

**Course Typically Offered:** Variable

Credits: 3

### **CHF 432 - Socialization of the Child**

A study of normal development and behavior with emphasis on the impact of peers, school and family on the developing child. Theory in child development is also examined.

**Prerequisites:** CHF 201.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **CHF 433 - Adolescence**

Growth and development during the adolescent years. Conceptual models and recent research are discussed.

**Prerequisites:** CHF 201 or PSY 100 and sophomore standing.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **CHF 434 - Adult Development and Aging**

Developmental processes and transitions from the early to later years of adulthood. Social, physical, cognitive, and familial aspects of adult growth and aging are examined.

**Prerequisites:** CHF 201 or permission.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **CHF 441 - Family Life Education Methods**

Provides students with an overview of the knowledge, skills, methods, current materials and resources to plan, implement and evaluate family life education programs for diverse learners including K-12 students, parents, community members, educators and other professionals. Students will practice developing and presenting educational programs.

**Course Typically Offered:** Variable

Credits: 3

### **CHF 442 - Helping Skills**

Examines the nature of helping relationships including descriptions, characteristics, stages and ethics of effective helpers and helping relationships. Considerable attention will be focused on learning the nonverbal and verbal responses used in helping interactions. To assist in the development of these helping skills, students can expect to be engaged in extensive practice sessions with classmates.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **CHF 450 - Early Childhood Special Education - Inclusion in the Early Childhood Classroom**

The emphasis of this course is on early intervention for young children with disabilities in group settings. The course will focus on history and rationale, legal foundations, theoretical perspectives service delivery models, family-professional partnerships, assessment practices, and curriculum development.

**Prerequisites:** CHF 201 and CHF 203.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **CHF 451 - Family Relationships**

The study of traditional and non-traditional family units as a system of interactions between individuals.

**Prerequisites:** CHF 200.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **CHF 452 - Violence in the Family**

Major forms of family violence, including child abuse and neglect, sexual abuse, and spouse abuse, are examined to provide students with an understanding of the development of dysfunctional forms of family interaction, descriptive knowledge on the prevalence of violent relationships at the national and local level, the necessary skills for identifying victims of abuse and the services available to them, and a preliminary understanding of the challenge of designing intervention strategies.

**General Education Requirements:** Satisfies the General Education Ethics Requirement.

**Prerequisites:** Junior or senior standing, CHF 200 or SOC 318 or permission.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **CHF 488 - Family Legal Issues**

Issues of legal interest to consumers. Social and economic effects on families will be emphasized.

**Prerequisites:** junior standing.

**Course Typically Offered:** Fall

Credits: 3

## **CHF 496 - Field Experience in Human Development and Family Studies**

An approved program of work experience for department majors that involves the application of theory and research in applied settings. Requires a written proposal outlining the proposed experience, its relation to the student's program of study, plan for faculty supervision and a final written report. No more than 6 credits may be used toward the departmental major and not more than 12 credits may be used toward the graduation requirements.

(Pass/Fail Grade Only.)

**Prerequisites:** Permission of instructor.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1-6

## **CHI 101 - Elementary Chinese I**

A systematic study of the basics of the Chinese language. Equal emphasis is placed on developing listening, speaking, reading, and writing. Culture is also an integral component of this course. Intended for students with no prior study of Chinese or fewer than two years in high school. This course is the first of a 2-semester sequence.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives requirement.

**Course Typically Offered:** Fall

Credits: 5

## **CHI 102 - Elementary Chinese II**

A systematic study of the basics of the Chinese language. Equal emphasis is placed on developing listening, speaking, reading and writing. Culture is also an integral component of this course. Intended for students who have successfully completed CHI 101. This course is a second of the 2-semester sequence.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives requirement.

Credits: 5

## **CHY 101 - Chemistry for Everyday Living**

A non-mathematical introduction to the basic principles of chemistry with an emphasis on chemistry relevant to everyday life. Topics will include nuclear, food, agricultural, drug, cosmetic and polymer chemistry. May be taken without CHY 102. Lec 3 with dem.

**General Education Requirements:** Together with CHY 102, this course Satisfies the General Education Lab in the Basic or Applied Sciences Requirement. Satisfies the General Education Applications of Scientific Knowledge Requirement when taken without CHY 102.

**Course Typically Offered:** Fall

Credits: 3

## **CHY 102 - Chemistry for Everyday Living Laboratory**

Accompanies CHY 101. Experiments will emphasize chemical topics relevant to everyday living. Lab 3.

**General Education Requirements:** Together with CHY 101, this course Satisfies the General Education Lab in the Basic or Applied Sciences Requirement.

**Course Typically Offered:** Fall

Credits: 1

## **CHY 105 - Majoring in Chemistry**

Introduces students to the faculty, students, facilities and resources central to their major in chemistry. Topics covered include requirements and advising for the major, library resources, research laboratories and projects, and the special expertise of the faculty.

(Pass/Fail Grade Only.)

**Prerequisites:** First-year students only.

**Course Typically Offered:** Fall

Credits: 1

## **CHY 121 - Introduction to Chemistry**

Topics include: units and definitions, atomic structure, bonding, chemical change, concentration of solutions, reaction rates and equilibria, acid-base chemistry and summary topics related to applications in materials science, biological chemistry and the environment. Lec 3.

**General Education Requirements:** Together with CHY 123, this course Satisfies the General Education Lab in the Basic or Applied Sciences Requirement. Satisfies the General Education Application of Scientific Knowledge Requirement when taken without CHY 123.

**Prerequisites:** Prerequisite or Corequisite: MAT 122 or MAT 126 or MAT 127 or TME 151 and TME 152. Corequisite: CHY 123.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

## **CHY 122 - The Molecular Basis of Chemical Change**

Topics include: atomic and molecular bonding; classes of chemical reactions, reactivity of non-metals and metals; materials chemistry; kinetics; thermodynamics; electrochemistry; nuclear chemistry. Lec 3.

**General Education Requirements:** Together with CHY 124, this course Satisfies the General Education Lab in the Basic or Applied Sciences Requirement Satisfies the General Education Applications of Scientific Knowledge Requirement when taken without CHY 124.

**Prerequisites:** A grade of C- or better in both CHY 121 and CHY 123.

**Corequisites:** CHY 124.

**Course Typically Offered:** Spring, Summer

Credits: 3

## **CHY 123 - Introduction to Chemistry Laboratory**

Introduction to experimental techniques and concepts in chemistry. Lab 3.

**General Education Requirements:** Together with CHY 121, this course Satisfies the General Education Lab in the Basic or Applied Sciences Requirement.

**Corequisites:** CHY 121

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1

## **CHY 124 - The Molecular Basis of Chemical Change Laboratory**

A continuation of CHY 123. Experimental techniques and concepts in chemistry. Lab 3.

**General Education Requirements:** Together with CHY 122, this course Satisfies the General Education Lab in the Basic or Applied Sciences Requirement.

**Prerequisites:** A grade of C- or better in both CHY 121 and CHY 123.

**Corequisites:** CHY 122.

**Course Typically Offered:** Spring, Summer

Credits: 1

### **CHY 131 - Chemistry for Civil, Electrical and Mechanical Engineers**

A one-semester course in general chemistry designed for civil, mechanical, and electrical engineering majors. Topics in solution chemistry, aqueous equilibria, kinetics, modern materials, and electrochemistry are emphasized. Enrollment is restricted to civil, electrical and mechanical engineering majors. This course does not serve as a prerequisite for other chemistry courses.

**Prerequisites:** Prerequisite: MAT 122 and only Civil, Electrical, and Mechanical Engineering majors.

**Corequisites:** CHY 133

**Course Typically Offered:** Fall

Credits: 3

### **CHY 133 - Chemistry for Civil, Electrical and Mechanical Engineers Laboratory**

A one-semester laboratory course in general chemistry designed for civil, mechanical, and electrical engineering majors. Topics in solution chemistry, aqueous equilibria, kinetics materials, and electrochemistry are emphasized. Enrollment is restricted to civil, electrical and mechanical engineering majors. This course does not serve as a prerequisite for other chemistry courses.

**Prerequisites:** Prerequisite: Civil, Electrical, and Mechanical Engineering majors.

**Corequisites:** CHY 131

**Course Typically Offered:** Fall

Credits: 1

### **CHY 242 - Principles of Quantitative Analysis and Solution Equilibria**

Topics covered include gravimetric and titrimetric methods of analysis and acid-base, complex formation, precipitation and oxidation-reduction equilibria. Spectrophotometric, potentiometric and chromatographic methods of analysis will be introduced. Laboratory determinations will provide examples of the above. Lec 3, Lab 6.

**Prerequisites:** A grade of C- or better in both CHY 122 and CHY 124.

**Course Typically Offered:** Variable

Credits: 5

### **CHY 251 - Organic Chemistry I**

An introduction to the chemistry of carbon compounds. Lec 3, Rec 1.

**Prerequisites:** A grade of C- or better in both CHY 122 and CHY 124.

**Course Typically Offered:** Fall & Summer

Credits: 3

## **CHY 252 - Organic Chemistry II**

A continuation of CHY 251 including the study of carbonyl compounds and amines. Lec 3, Rec 1.

**Prerequisites:** A grade of C- or better in CHY 251.

**Course Typically Offered:** Spring, Summer

Credits: 3

## **CHY 253 - Organic Chemistry Laboratory I**

An introduction to the separation, synthesis and analysis of organic compounds in the laboratory. Lab 4.

**Prerequisites:** A grade of C- or better in CHY 251 or concurrently.

**Course Typically Offered:** Fall & Summer

Credits: 2

## **CHY 254 - Organic Chemistry Laboratory II**

A continuation of CHY 253. Lab 4.

**Prerequisites:** A grade of C- or better in CHY 251 and CHY 253. Prerequisite or Corequisite: CHY 252.

**Corequisites:** Prerequisite or Corequisite: CHY 252.

**Course Typically Offered:** Spring, Summer

Credits: 2

## **CHY 298 - Introduction to Chemistry Research**



Topics covered will include introduction to chemical literature databases; data analysis tools; careers in chemistry; laboratory safety; and information about choosing a research project. This course is expected to result in the initiation of thesis research.

**Prerequisites:** Sophomore Standing.

**Course Typically Offered:** Spring

Credits: 1

### **CHY 393 - Undergraduate Seminar in Chemistry**

Discussion of developments in chemistry and the chemical profession. Introduction to chemical literature and research methods. Oral presentations and written papers required.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** Chemistry major; A grade of C- or better in CHY 122.

**Course Typically Offered:** Fall

Credits: 3

### **CHY 394 - Field Experience/Cooperative Education**

Supervised employment with relevance to the study of chemistry in the public or private sector. A proposed program of study, mutually agreed upon by the student, faculty adviser, and "Co-Op" sponsor may be carried out in the summertime or during the academic year. A written report is required.

(Pass/Fail Grade Only.)

**Prerequisites:** junior or senior standing with a good academic record; permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1-9

### **CHY 423 - Introductory Polymer Chemistry**

Fundamentals of polymer types, synthesis kinetics and mechanisms, characterization techniques, and molecular structure.

**Prerequisites:** a grade of C- or better in CHY 252 and MAT 127 or permission

**Course Typically Offered:** Fall, Alternating

Credits: 3

### **CHY 431 - Structure and Mechanism in Biological Chemistry**

Examination of biosynthetic pathways, structure and function of enzymes (including metalloenzymes) and other important biomolecules, methods of structure determination and synthetic pathway elucidation and mechanisms of enzyme-catalyzed reactions.

**Prerequisites:** A grade of C- or better in CHY 252

**Course Typically Offered:** Spring

Credits: 3

### **CHY 443 - Instrumental Analysis**

Modern tools for acquiring qualitative and quantitative data about the composition and structure of matter. A blend of theoretical and experimental/hands on approaches to investigate modern spectroscopic and separation techniques for solving "real world" bioanalytical and environmental problems. Lec 3.

**Prerequisites:** A grade of C- or better in CHY 242 and CHY 471.

**Course Typically Offered:** Variable

Credits: 3

### **CHY 450 - Introduction to Molecular Modeling**

An introduction to the computational investigation of molecular structure, and properties. Topics include operation of UNIX workstations, and nature and application of molecular mechanics, semi-empirical molecular orbital calculations and *ab initio* molecular orbital calculations. Lec 3, Lab 3.

**Prerequisites:** A grade of C- or better in CHY 252 and CHY 472.

**Course Typically Offered:** Variable

Credits: 4

### **CHY 453 - Intermediate Organic Chemistry**

Qualitative organic analysis by chemical and instrumental methods. Lec 2, Rec 1, Lab 3.

**Prerequisites:** A grade of C- or better in CHY 252 and CHY 254.

**Course Typically Offered:** Spring, Odd Years

Credits: 4

### **CHY 461 - Advanced Inorganic Chemistry I**

Advanced theoretical and descriptive inorganic chemistry emphasizing periodic relationships. Lec 3.

**Prerequisites:** A grade of C- or better in CHY 471 or permission.

**Course Typically Offered:** Fall

Credits: 3

### **CHY 462 - Organometallic Chemistry**

Principles and applications of organotransition metal chemistry. Topics include coordination chemistry, group theory, organometallic reaction mechanisms, electrochemistry, photochemistry, bioinorganic chemistry, catalysis and applications to organic synthesis. Lec 3.

**Prerequisites:** A grade of C- or better in CHY 252.

**Corequisites:** CHY 471.

**Course Typically Offered:** Spring, Even Years

Credits: 3

### **CHY 471 - Physical Chemistry I**

Applications of classical thermodynamics to the study of chemical systems. Lec 3.

**Prerequisites:** A grade of C- or better in CHY 122; MAT 228 and PHY 112 or PHY 122 or equivalent.

**Course Typically Offered:** Fall

Credits: 3

## **CHY 472 - Physical Chemistry II**

Covers electrochemistry, kinetic theory of gases, transport processes and reaction kinetics and an introduction to statistical thermodynamics. Lec 3.

**Prerequisites:** A grade of C- or better in CHY 122; MAT 228 and PHY 112 or PHY 122.

**Course Typically Offered:** Spring

Credits: 3

## **CHY 475 - Physical Chemistry III**

An introduction to quantum mechanics, spectroscopy and chemical bonding. Lec 3.

**Prerequisites:** PHY 122, MAT 228 and MAT 258 or equivalent.

**Course Typically Offered:** Spring

Credits: 3

## **CHY 477 - Nanoscience**

An introduction to nanoscience that details the basic principles and recent developments of nanoscale science and technology. Students will learn both the fundamental concepts of nanoscale science and its application to the development of new materials, processes technology and devices. Scientific explanations for the basis of nanoscale derived properties will be illustrated by specific research examples. Topics will include: nanoscale materials, micro/nano fabrication, nano instrumentation, atomic manipulations and nanorobotics. CHY 477 and ECE 457 are identical courses.

**Prerequisites:** CHY 122 or CHY 131 and PHY 122 and MAT 258.

**Course Typically Offered:** Spring

Credits: 3

## **CHY 483 - Introductory Wood Chemistry**

Emphasis on the chemical and physical properties of cellulose, hemicelluloses, lignin and extractives. Lec 3.

**Prerequisites:** A grade of C- or better in CHY 252 or permission.

**Course Typically Offered:** Spring

Credits: 3

### **CHY 490 - Topics in Chemistry**

Advanced treatment of specialized topics in chemistry. Topics vary. May be repeated for credit.

**Prerequisites:** Permission.

**Course Typically Offered:** Variable

Credits: 3

### **CHY 491 - Advanced Integrated Laboratory I**

An advanced laboratory environment integrating inorganic, instrumental and physical chemistry concepts. Synthetic techniques, instrumental methods, reaction kinetics, thermodynamics and spectroscopy will be included. Lab 8.

**Prerequisites:** A grade of C- or better in CHY 242, CHY 254, CHY 471, or concurrently.

**Course Typically Offered:** Variable

Credits: 3

### **CHY 498 - Undergraduate Research**

Students will conduct a research project under the supervision of faculty member. A total of three credit hours are required for the BS degree in Chemistry. It is recommended that students register for one credit hour in each of three different semesters to fulfill this requirement.

**General Education Requirements:** Together with CHY 499, this course satisfies the General Education Capstone Experience Requirement.

**Prerequisites:** CHY 298.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1-2

### **CHY 499 - Undergraduate Thesis**

Written report of an original investigation carried out in the library and laboratory.

**General Education Requirements:** Together with CHY 498, this course satisfies the General Education Capstone Experience Requirement.

**Prerequisites:** CHY 498 and Senior Standing.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

## **CIE 100 - Introduction to Civil and Environmental Engineering**

Introduces first-year and transfer students in Civil Engineering to the multifaceted field of Civil and Environmental Engineering. Each week a different faculty member will conduct the class. Challenging problems will be introduced and team work will be practiced. Lec 1. (Fall.)  
(Pass/Fail Grade Only.)

**Course Typically Offered:** Fall

Credits: 1

## **CIE 101 - Civil Engineering Graphics**

Graphic principles, concepts and techniques involving civil engineering applications. Exercises will be done in 2D/3D using CADD software. 1.0 ED/2.0 ES. Lec 2, Lab 2. (Spring.)

**Course Typically Offered:** Spring

Credits: 3

## **CIE 110 - Materials**

The structure, properties, and testing of engineering materials and their use in constructed facilities. Includes metals, woods, concrete, bituminous mixtures, plastics, insulation, adhesives and corrosion of materials. Engineering design is introduced by readings and discussions on creativity, the design process and the concepts of marginal economic analysis, probability of failure and safety factors. Design problems include design of concrete mixtures and insulating systems to satisfy specific realistic situations taking into account uncertainty, safety, economic factors and intangibles, as well as technical considerations. (0.0 ED/3.0 ES.) Lec 3.

**Prerequisites:** MAT 122 or concurrently.

**Course Typically Offered:** Fall

Credits: 3

### **CIE 111 - Materials Laboratory**

Evaluation of material performance under applied loads for engineering applications. Physical properties of concrete, metals, plastics and wood. Exercises include study of the variability of materials, construction of probability density functions from test data and computation of the probability of failure. (1.0 ED/0.0 ES.) Lab 2 (Fall.)

**Corequisites:** CIE 110

**Course Typically Offered:** Fall

Credits: 1

### **CIE 115 - Computers in Civil Engineering**

Introduces the student to computers and computations by solving examples relevant to civil engineering. The algorithmic aspects of programming as well as the development of simple graphical user interfaces are taught. Approximately one half of the course time is allocated to programming with the remainder involving problems and applications. Specific examples typically include problems from structures, geotechnical, transportation and environmental engineering. Emphasis is placed on examples introducing statistical methods. Also introduces the use of spreadsheets, word processing and a mathematics program. (0.0 ED/3.0 ES.) Lec 2, Lab 3 (Spring.)

**Prerequisites:** MAT 126, Civil Engineering majors only.

**Course Typically Offered:** Spring

Credits: 3

### **CIE 210 - Sustainability in Engineering**

Introduction to sustainability and sustainable development concepts; role of engineers in sustainable development; ethical dimension of sustainable development-engineers, technology and ethics; measuring sustainability; green and sustainable materials; engineers as problem solvers and curators of the planet. No specialized background in engineering, sciences or social sciences is required.

**General Education Requirements:** Satisfies the Population and Environment and Ethics General Education Requirements.

**Course Typically Offered:** Fall

Credits: 3

## **CIE 225 - Transportation Engineering**

An introduction to the broad field of transportation with emphasis on the motor vehicle mode. Principles of roadway and urban transportation planning, economic analysis methods, and route design elements are discussed and related to the planning and design of highway transportation routes. Students design a section of roadway and prepare a technical paper on a current transportation engineering problem. (3.0 ED/0.0 ES.) Lec 3. (Spring.)

**General Education Requirements:** Together with ECP 225, this course satisfies the General Education Writing Intensive requirement.

**Prerequisites:** Civil Engineering majors or permission.

**Course Typically Offered:** Spring

Credits: 3

## **CIE 331 - Fundamentals of Environmental Engineering**

Introduction to environmental engineering including water quality, water and wastewater treatment plant design, solid and hazardous wastes, landfill design, radioactive waste control and air pollution abatement (1.0 ED/2.0 ES.) Lec 3. (Fall.)

**Prerequisites:** Grade of C or better in CHY 131, CHY 133 and MAT 127.

**Course Typically Offered:** Fall

Credits: 3

## **CIE 340 - Introduction to Structural Analysis**

The cyclic process of analysis and design. Structure idealization and modeling. Design methodologies and loads considerations. The analysis of determinate trusses, beams and frames. Introduction to indeterminate structures. (1.0 ED/3.0 ES.) Lec 3, Lab 3 (Fall.)

**Prerequisites:** C or better in MEE 150 and in MEE 251.

**Course Typically Offered:** Fall

Credits: 4

## **CIE 350 - Hydraulics**



An elementary course presenting fundamental principles of fluid flow and their applications to engineering problems. Includes study of hydrostatics, liquid measuring devices and channel and pipe flow. (0.0 ED/3.0 ES.) Lec 3. (Fall.)

**Prerequisites:** Grade of C or better in MEE 150. Prerequisite or Corequisite: MAT 258. MAT 258 may be taken concurrent.

**Corequisites:** Prerequisite or Corequisite: MAT 258. MAT 258 may be taken concurrent.

**Course Typically Offered:** Fall

Credits: 3

### **CIE 351 - Hydraulics Laboratory**

Application of hydraulic principles in laboratory experiments. Includes experiments on buoyancy and flotation, forces on submerged planes, venturi meter calibration, pipe friction, losses, weirs and others. (0.0 ED/1.0 ES.) Lab 2 (Fall.)

**Prerequisites:** CIE 350 or concurrently.

**Course Typically Offered:** Fall

Credits: 1

### **CIE 365 - Soil Mechanics**

An introduction to fundamental physical properties, engineering behavior and performance of soils and rocks. (0.0 ED/3.0 ES.) Lec 3. (Spring.)

**Prerequisites:** MEE 251 or concurrently.

**Course Typically Offered:** Spring

Credits: 3

### **CIE 366 - Soil Mechanics Laboratory**

Covers geotechnical laboratory testing including classification, density, permeability, shear strength, and consolidation tests. Project reports are also submitted to ECP 366. (0.0 ED/1.0 ES.) Lab 2. (Spring.).

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Corequisites:** CIE 365 and ECP 366.

**Course Typically Offered:** Spring

Credits: 1

### **CIE 394 - Civil Engineering Practice**

Cooperative work experience in civil and environmental engineering. Up to three credits may count toward the degree. (Usually summer.)

(Pass/Fail Grade Only.)

**Prerequisites:** sophomore standing.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1-3

### **CIE 410 - Engineering Ethics**

Introduces students to ethics theory, general concepts and principles pertaining to engineering ethics and handling ethical situations in practice. Throughout the course, students will be presented with a combination of lecture, engineering ethical situations using a case or example approach and discussion sessions.

**General Education Requirements:** Satisfies the General Education Ethics Requirement.

**Prerequisites:** ENG 101 or equivalent and junior standing.

**Course Typically Offered:** Spring

Credits: 1

### **CIE 411 - Engineering Project Design**

Student design teams develop the conceptual design of an active civil engineering project. Topics include: consulting firm practice, the design process, evaluation of alternatives, regulatory constraints and the permit process, legal, ethical and social aspects of professional engineering practice, cost and scheduling estimations. Oral presentations and written technical reports are required. Open only to civil engineering students during their last spring semester. (3.0 ED/0.0 ES.) Lec 2, Lab 3. (Spring.)

**General Education Requirements:** Satisfies the General Education Capstone Experience Requirement.

**Prerequisites:** CIE 413.

**Course Typically Offered:** Spring

Credits: 3

## **CIE 412 - Engineering Decisions**

Application of various analysis methods to engineering design decisions. Evaluation of economic, financial, legal, and ethical factors affecting engineering design. Topics include: engineering economy, consideration of risk and uncertainty, and evaluation of ambiguous and intangible factors in engineering design. (0.0 ED/2.0 ES.) Lec 2. (Fall.)

**Prerequisites:** Senior standing or permission of instructor.

**Course Typically Offered:** Fall

Credits: 2

## **CIE 413 - Project Management**

Role of civil engineer in the implementation process of engineering projects from project conceptualization through design, construction, commissioning, start-up, and operations. Topics include: project life-cycle, project manager's tools, quality and risk management, required deliverables of design, cost and time estimates, and dispute resolution. (1.0 ED/1.0 ES.) Lec 2. (Fall.)

**General Education Requirements:** Together with ECP 413, this course satisfies the General Education Writing Intensive requirement.

**Prerequisites:** Senior Standing or permission;

**Corequisites:** ECP 413

**Course Typically Offered:** Fall

Credits: 2

## **CIE 424 - Urban Transportation Planning**

Basic concepts and practices in the field of transportation planning, including the process and policy surrounding urban transportation planning, characteristics of urban travel, air quality - noise, energy - land use, the elements of decision making, data management and diagnosis, demand and supply analysis, project evaluation and implementation. A transportation demand management study constitutes a major part of the course. (2.0 ED/1.0 ES) Lec 3. (Spring.)

**Prerequisites:** Grade of C or better in CIE 225.

**Course Typically Offered:** Spring

Credits: 3

## **CIE 425 - Transportation Safety**

Fundamental theory on transportation safety processes and evaluation methodology. Topics: vehicle/road/driver interaction, countermeasure effectiveness, enforcement, education and engineering measures. (1.0 ED/2.0 ES). Lec 3. (Fall.)

**Prerequisites:** Grade of C or better in CIE 225.

**Course Typically Offered:** Fall

Credits: 3

## **CIE 426 - Advanced Roadway Design**

Principles of highway location, design of vertical and horizontal alignment, design and construction of surface treatments, pavement structures and roadway drainage systems. Student project preparing necessary plan-profile and cross section drawings required to construct a 3,000 foot section of roadway, which is evaluated with respect to road-user travel time, comfort and safety; impact on surrounding environment including aesthetical aspects; and construction cost. (3.0 ED/0.0 ES.) Lec 3. (Fall.)

**Prerequisites:** Grade of C or better in CIE 225.

**Course Typically Offered:** Fall

Credits: 3

## **CIE 430 - Water Treatment**

Introduction to environmental chemistry as related to water treatment technology, and analysis and design of water treatment systems. (3.0 ED/1.0 ES) Lec 3, Lab 3. (Fall)

**Prerequisites:** Grade of C or better in CIE 331 and in CIE 350.

**Course Typically Offered:** Fall

Credits: 4

## **CIE 431 - Pollutant Fate and Transport**

Introduction to environmental transformation processes which controls the fate and transport of contaminants in the environment and in engineered systems. Topics include reaction energetics and kinetics, reactor engineering concepts, interphase mass transfer and phase partitioning. (3.0 ED/1.0 ES). Lec 3, Lab 3 (Spring.)

**Prerequisites:** Grade of C or better in CIE 331 and in MAT 258.

**Course Typically Offered:** Variable

Credits: 4

### **CIE 434 - Wastewater Process Design**

Theory and design of wastewater treatment facilities. Design projects cover processes such as sedimentation, biological treatment, aeration and disinfection. (3.0 ED/1.0 ES). Lec 3, Lab 1. (Spring.)

**Prerequisites:** Grade of C or better in CIE 331 and in CIE 350.

**Course Typically Offered:** Spring

Credits: 4

### **CIE 439 - Solid Waste and Air Pollution**

This course covers the basic theory and design of solid waste handling systems and air pollution generation, effects and control. Topics include solid waste characteristics and generation, collection, recycling, composting, incineration and landfilling; air pollutants, meteorology and dispersion modeling, and emission control. (0.0 ED/3.0 ES)

**Prerequisites:** Grade of C or better in CIE 331.

**Course Typically Offered:** Spring

Credits: 3

### **CIE 440 - Structural Analysis I**

Classical and matrix methods in the analysis of linear redundant systems. The basic concepts of equilibrium, stress-strain relations, and compatibility are emphasized. Manual and introductory computer aided solution techniques are utilized. (0.0 ED/4.0 ES.) Lec 3, Lab 3. (Spring.)

**Prerequisites:** C or better in CIE 340.

**Course Typically Offered:** Spring

Credits: 4

### **CIE 442 - Structural Design I**

Gravity loading and vertical load path for steel and concrete structures. LRFD design methodology and load combinations. Design of simple flexural and axial members in steel and reinforced concrete. (4.0ED/0.0 ES.) Lec 3, Lab 3

**Prerequisites:** C or better in CIE 340.

**Course Typically Offered:** Fall

Credits: 4

## **CIE 443 - Structural Design II**

The design and detailing of steel structures: tension members, beams, columns, beam columns, and connections. Covers composite construction. Introduces the Load and Resistance Factor Design concept. Microcomputer aided design project. (4.0 ED/0.0 ES.) Lec 3, Lab 3. (Spring.)

**Prerequisites:** CIE 442.

**Course Typically Offered:** Spring

Credits: 4

## **CIE 450 - Open Channel Hydraulics**

Covers uniform and nonuniform flow in open channels, gradually and rapidly varying flow, computational methods for flow profiles, open channel flow structures. (1.0 ED/2.0 ES.) Lec 3. (Spring.)

**Prerequisites:** Grade of C or better in CIE 350.

**Course Typically Offered:** Variable

Credits: 3

## **CIE 455 - Hydrology**

Application of statistical analysis of rainfall and runoff processes for the development of design parameters of water resources projects, including uncertainty of these parameters. Includes collection and presentation of rainfall and runoff data, methods for developing hydrographs and flood control, development of design hydrographs for urbanizing watersheds. (1.0 ED/2.0 ES.) Lec 3. (Fall.)

**Prerequisites:** Grade of C or better in CIE 350.

**Course Typically Offered:** Fall

Credits: 3

### **CIE 456 - Groundwater Hydrology and Hydraulics**

Fundamentals of the hydrodynamics of flow through porous media, and the development of methodology for solving the many open-ended problems of groundwater flow, supply and pollution. Concepts of groundwater modeling design. Aspects of field variability and uncertainty. (1.0 ED/2.0 ES.) Lec 3. (Spring.)

**Prerequisites:** C or better in CIE 350 and in MAT 258.

**Course Typically Offered:** Spring

Credits: 3

### **CIE 460 - Geotechnical Engineering**

The application of geotechnical engineering to practical engineering design and construction problems including consideration of economic and safety constraints. (3.0 ED/0.0 ES.) Lec 3. (Fall.)

**Prerequisites:** Grade of C or better in CIE 365.

**Course Typically Offered:** Fall

Credits: 3

### **CIE 480 - Wind Energy Engineering**

This course presents the theory and design of modern wind turbines. Theoretical aspects of the course cover the fundamentals of assessing the aerodynamic loads and efficiency of a wind turbine. Design procedures for wind turbines are outlined with an emphasis on maximizing performance, assuring structural integrity and minimizing the cost of energy. Current trends in offshore wind are also covered as well as the social and environmental issues of a burgeoning wind energy industry.

**Prerequisites:** MAT 258 and C or better in MEE 251.

**Corequisites:** CIE 350 or MEE 360.

**Course Typically Offered:** Spring, Even Years

Credits: 3

### **CIE 498 - Selected Studies in Civil Engineering**

Topics in civil engineering not regularly covered in other courses. Specific topics vary. May, with permission of the department, be repeated for credit. (Fall and Spring.)

**Prerequisites:** permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1-3

### **CLA 101 - Greek Literature in English Translation**

A survey of Greek literature. No knowledge of Greek is necessary.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives, Western Cultural Traditions and Writing Intensive Requirements.

**Course Typically Offered:** Fall, Even Years

Credits: 3

### **CLA 102 - Latin Literature in English Translation**

A survey of Latin literature. No knowledge of Latin is necessary.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives, Western Cultural Traditions and Writing Intensive Requirements.

**Course Typically Offered:** Spring, Odd Years

Credits: 3

### **CLA 201 - Women in the Ancient World**

Investigates the social and literary context of the lives of women in several ancient Mediterranean cultures; Near East, Hebrew, North Africa, Greece and Rome.

**Course Typically Offered:** Fall, Odd Years

Credits: 3

### **CLA 202 - Mythology of the Ancient Near East, North African and Greece**



Surveys the mythologies of the ancient Mediterranean Basin, including Hebrew Mythology. Through lectures, reading and video the major deities and heroes of each culture will be presented within their cultural context, including the stories associated with them.

**Course Typically Offered:** Spring, Even Years

Credits: 3

### **CLA 400 - Hero: Myth and Meaning**

The idea of the hero has been important in culture and art since the earliest epic. What is heroism? What defines the hero? How does a person become a hero and what do you do afterward? These are all questions that the great epic stories from the past and the world of the media today seek to address and answer. This course looks at ancient epics dealing with the hero and brings hero tales through time to today. We look at myth, legend and lived experience, with special attention to the world of the heroes as articulated through their representation in literature, art, music and film.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives, and Western Cultural Traditions Requirements.

**Prerequisites:** Sophomore Standing

**Course Typically Offered:** Variable

Credits: 3

### **CLA 401 - Amazons: Myth and Reality**

The question of women and war, including the question of women warriors, has engaged people for centuries. Beginning with the mythology and mythic history of Amazons in ancient Greece, this course traces the tradition of the woman warrior in Western cultural representations (literature, art, legend). Several non-European cultural traditions of women warriors, and the testimony of women who have fought in resistance movements and war in the modern period, contemporary attitudes toward women within the military. Depiction of Amazons in contemporary fantasy and film comprises an additional component of the course.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives, and Western Cultural Traditions Requirements.

**Prerequisites:** Sophomore Standing.

**Course Typically Offered:** Variable

Credits: 3

### **CMJ 100 - Introduction to Mass Communication**

Introduces the structure and operation of mass media and the social, political and economic implications of their activities.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions Requirement.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **CMJ 102 - Fundamentals of Interpersonal Communication**

The basic elements of interpersonal communication, with special emphasis on developing knowledge and skills applicable to face-to-face interactions between individuals and in small groups. Participation in research to a maximum of 3 hours is expected.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions Requirement.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **CMJ 103 - Fundamentals of Public Communication**

The nature and problems of public speech communication, with practical experience in representative speaking situations. Participation in research to a maximum of 3 hours is expected.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions Requirement.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **CMJ 106 - Storytelling**

An introduction to storytelling as a communication practice in daily life. Emphasis is on gaining greater sensitivity and expressiveness as a communicator. Participation in research to a maximum of 3 hours is expected.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **CMJ 107 - Communication and the Environment**

This course provides an overview of the field of Environmental Communication. Students survey a range of disciplinary approaches including environmental journalism and media, science communication and participation, and public participation and decision making in environmental conflicts.

**General Education Requirements:** Satisfies the Population and Environment and the Social Context and Institutions General Education Requirements

**Course Typically Offered:** Fall

Credits: 3

## **CMJ 201 - Communication Studies I**

Introduction to historical and philosophical approaches to the study of communication. The course examines communication from the classical, modern and contemporary perspectives, with specific attention to the rhetorical theorists and theories that have been dominant in the history of communication.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition Requirement.

**Course Typically Offered:** Spring

Credits: 3

## **CMJ 202 - Communication Studies II**

Introduction to social and human science approaches in communication studies. The course examines communication theories and models, the function of language and symbolic behavior in society and culture, and the nature of interaction and interpretation. Not open to first-year students.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions Requirement.

**Course Typically Offered:** Fall

Credits: 3

## **CMJ 203 - Mass Communication Studies**

Introduction to mass communication theories and research in the social and human sciences.

**Prerequisites:** Not open to newly admitted First-Year Students.

**Course Typically Offered:** Fall

Credits: 3

### **CMJ 211 - Journalism Studies I: Introduction and History**

Surveys the structures of journalistic media and the social history of journalism's roles, technologies and processes, with emphasis on interactions with political, economic and cultural institutions and the social implications of media activities.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Social Contexts and Institutions Requirements.

**Course Typically Offered:** Fall

Credits: 3

### **CMJ 225 - Sex, Gender and Communication**

Examines various contexts and relationships influenced by sex and/or gender. Several theoretical frameworks and definitions are explored.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **CMJ 236 - Journalism Writing and Editing**

Intensive introduction to news writing and editing, with emphasis on accuracy, style, as well as grammar, spelling and usage. Students must earn a B or better in CMJ 236 and pass a writing exam to continue taking professional courses in the Journalism Major.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** ENG 101 with a "C-" or Higher OR (HON 111 & 112 with a "C" or Higher)

**Course Typically Offered:** Fall & Spring

Credits: 3

### **CMJ 237 - Journalism Across Platforms**

Develops journalistic skills across traditional and emerging media platforms, including print, broadcasting, and online formats and technologies. Includes media lab instruction and assignments.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** B or better in CMJ 236, Journalism Majors, and a passing grade on Journalism Writing Exam

**Course Typically Offered:** Spring

Credits: 4

### **CMJ 245 - Film Criticism and Theory**

Offers a mass communication/media studies overview of contemporary film. Students will develop skills in the analysis of film form and content so that they will achieve a high degree of proficiency in the use of film studies vocabulary. After developing an understanding of how the different elements of film work to construct meaning within (as well as outside of) film, the course will survey major theories and methodologies of film studies. Likewise, participants will receive an overview of film history and will develop familiarity with major historical and technological development of film. Participants will learn to think critically about the media industry and to evaluate film as art form, individual psychological experience, technology, social text, and commodity. (This course is identical to NMD 245.)

**Course Typically Offered:** Variable

Credits: 3

### **CMJ 257 - Business and Professional Communication**

Advanced study and practice in specialized audience analysis, strategies and tactics, conference procedures, interviewing techniques, and delivery of professional presentations.

**Prerequisites:** C- or better in CMJ 103, and Junior standing.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **CMJ 261 - Photographic Reporting and Storytelling**

An overview of photojournalism history, theory and ethics. Exercises teach skills and strategies used by newspaper, magazine and on-line photographers and editors and challenge students to deal responsibly with issues of invasion of privacy, subject representation, copyright and fair use and image manipulation. (This course is identical to NMD 341.)

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Prerequisites:** None.

**Course Typically Offered:** Variable

Credits: 3

### **CMJ 314 - International Mass Communication**

Survey of media systems around the world and the role of mass media in political, social, economic and cultural development.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and Cultural Diversity and International Perspectives Requirements.

**Course Typically Offered:** Variable

Credits: 3

### **CMJ 324 - Interpersonal Communication in Everyday Life**

The advanced study of interpersonal communication as it functions across a range of human relationship, such as family, friends, professions and organizations. Examines perspectives, theories, and research on communication in everyday life.

**Prerequisites:** 3 hours of CMJ courses.

**Course Typically Offered:** Variable

Credits: 3

### **CMJ 330 - Copy Editing**

A course in copy editing designed to develop editorial judgement and skills for preparing news for publication. Covers headline and prose writing, image editing, and basic page design. A passing grade on Journalism Writing Exam is required.

**Prerequisites:** A grade of B or better in CMJ 236 or permission

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **CMJ 332 - Public Affairs Reporting and Research**

Develops journalistic reporting, information gathering and research techniques for students to cover public issues in government, education, health, business and other areas of social concern for publication or presentation in multimedia forms.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** B or better in CMJ 236, Journalism Majors, and a passing grade on Journalism Writing Exam

**Course Typically Offered:** Fall

Credits: 3

### **CMJ 345 - Small Group Communication: Service-Learning**

This is a service-learning course that introduces students to the theory and applications of small group communication. Students will obtain practical experience working in groups with a community partner to help meet a community need and learn about the complexity of the issue.

**Course Typically Offered:** Variable

Credits: 3

### **CMJ 347 - Argument and Critical Thinking**

An introduction to the principles of decision-making through critical thinking applied to reasoned advocacy. Practical application of these principles through classroom experience.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** 3 hours of CMJ courses.

**Course Typically Offered:** Variable

Credits: 3

### **CMJ 351 - Multimedia Production**

Conception, design and development of non-linear audio and video production for print, broadcast, non-broadcast and online uses. Explores the fundamental principles of digital audio and video production as well as the creative uses of cameras, sound, digital non-linear editing, and graphics in news features and mini-documentaries.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Prerequisites:** B or better in CMJ 236, C- or better in CMJ 237 or portfolio approved by instructor, Journalism Majors, and a

passing grade on Journalism Writing Exam.

**Course Typically Offered:** Fall

Credits: 4

### **CMJ 355 - Advertising Copy and Graphics**

Provides theory and practice in creating advertising for print, direct mail and electronic media, with emphasis on the limitations of each and the responsibilities of the advertising practitioner.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** CMJ 236 and CMJ 250 with 'C-' or better.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **CMJ 356 - Advertising Media**

Covers problems and procedures for creating an advertising media plan with emphasis on basic media math skills. The knowledge covered addresses media selection, as well as other areas of advertising, including creative, research, management and marketing.

**Prerequisites:** CMJ 250 or BUA 370 with 'C-' or better.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **CMJ 360 - Nonverbal Communication**

Examines important non-linguistic variables related to human interactions. Specific emphasis on the effects of kinesics, proxemics, paralanguage and other code systems as they affect meaning in communication efforts.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** Not open to first-year students.

**Course Typically Offered:** Variable

Credits: 3



## **CMJ 361 - Documentary Photography and Audio**

Provides the essential skills, concepts and processes used by documentary still photographers and audio producers to create professional quality digital mixed media products for the Internet and other interactive media. (This course is identical to NMD 301.)

**Prerequisites:** C- or better in CMJ 261 or C- or better in NMD 201.

**Course Typically Offered:** Variable

Credits: 3

## **CMJ 366 - Speech Play and Performance**

Study of creative and aesthetic dimensions of communication and language. Examines how people use speech play and performance (e.g. word play, joking, storytelling, performing literature) and what happens when they do. Focus on performance as a cultural event in everyday life as well as in society and the media.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives and Artistic and Creative Expression Requirements.

**Prerequisites:** 3 hours of CMJ courses.

**Course Typically Offered:** Fall, Even Years

Credits: 3

## **CMJ 367 - Public Relations**

The study of those activities which help to create public understanding and acceptance of an organization's policies and programs.

**Prerequisites:** Junior or senior standing. 3 hours of CMJ courses.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **CMJ 370 - Visual Communication**

An introduction to modes of analysis of visual communication (which may include photography, the web, painting, film, television, sculpture, theater, advertising, etc.), with reference to social institutions and cultural norms that affect the interpretation of visual media.

**Prerequisites:** 3 hours of CMJ courses.

**Course Typically Offered:** Variable

Credits: 3

### **CMJ 375 - Journalism Studies II: Law and Ethics**

Study of legal and ethical topics including libel, privacy, contempt, copyright, obscenity, censorship, and pre-trial publicity. The course explores the impact of journalism ethics on politics, economics and society.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Social Contexts and Institutions Requirements.

**Course Typically Offered:** Spring

Credits: 3

### **CMJ 376 - Modes of Media Criticism**

Cooperative examination of modes of mass media criticism. Critical analysis of methods and techniques employed by scholars, journalists, and critics to evaluate contemporary trends and practices in the mass media industries.

**Course Typically Offered:** Fall

Credits: 3

### **CMJ 380 - Advertising, Media and Society**

Examines advertising's impact on U.S. society; especially on women, children, minorities, families and popular culture.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions Requirement.

**Course Typically Offered:** Variable

Credits: 3

### **CMJ 391 - Topics in Journalism**

Topics not regularly covered in other Journalism courses. Content varies to suit current needs. May be repeated for credit.

**Prerequisites:** CMJ 236 with a grade of B or better.

**Course Typically Offered:** Variable.

Credits: 3

### **CMJ 393 - Topics in Communication**

Topics not regularly covered in other Communication courses. Content varies to suit current needs. May be repeated for credit.

**Prerequisites:** 3 credits of completed CMJ coursework.

**Course Typically Offered:** Variable

Credits: 3

### **CMJ 395 - Student Media Practicum**

Provides practical experience relevant to the journalism major on one of the UMaine campus student media outlets and integrates the student's media work experience with the skills and theories learned in the classroom. A maximum of 3 credits permitted.

**Prerequisites:** B or better in CMJ 236, Journalism Majors, and a passing grade on Journalism Writing Exam and permission

**Course Typically Offered:** Fall & Spring

Credits: 1-3

### **CMJ 398 - Topics in Mass Communication**

Topics not regularly covered in other Mass Communication courses. Content varies to suit current needs. May be repeated for credit.

**Prerequisites:** 3 credits of completed CMJ coursework

**Course Typically Offered:** Variable

Credits: 3

## **CMJ 401 - Speech, Space, Event: Critical Applications**

Introduction to the subject of criticism from a rhetorical perspective. Examines methods of critical reading, criticism of several kinds of texts, including speeches, social spaces, and events, and how texts are made meaningful and why. Involves application of evaluative criteria such as aesthetics, truth, effects and especially ethics.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives and Writing Intensive Requirements.

**Prerequisites:** Junior standing.

**Course Typically Offered:** Variable

Credits: 3

## **CMJ 402 - Communication Research**

An introduction to social science inquiry into the nature, forms and functions of human communication. Focuses on conceptualizing communication research problems and selecting appropriate methodologies and analyses for examining communication data.

**General Education Requirements:** Satisfies the General Education Mathematics Requirement.

**Prerequisites:** Junior standing.

**Course Typically Offered:** Variable

Credits: 3

## **CMJ 403 - Persuasion and Social Influence**

Study of the theory and principles involved in the process of influencing the beliefs, attitudes and values of others. Focus on social science and humanistic explanations of what makes messages persuasive in interpersonal and public contexts.

**Prerequisites:** 3 hours in CMJ courses.

**Course Typically Offered:** Variable

Credits: 3

## **CMJ 405 - Women and Communication**

A systematic study of research by and about women with regard to language, speech, and communication pragmatics, discussed within a variety of communication contexts. Not open to first-year students.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** 3 hrs of CMJ or C- or better in WST 101.

**Course Typically Offered:** Spring

Credits: 3

### **CMJ 410 - Social Influence of Mass Communication**

A study of the communicative impact of mass media (e.g., television, radio, newspapers), and uses of the media in other communicative contexts (e.g., small group and interpersonal situations.) Current mass communication theories and research studies are explored.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions Requirement.

**Prerequisites:** 3 hours of CMJ courses.

**Course Typically Offered:** Variable

Credits: 3

### **CMJ 412 - Electronic Media Management and Programming**

Overview of the tasks involved in managing electronic media outlets, with special emphasis on radio and TV. Begins with a general treatment of management and programming theory and practice and covers specific topics including finance, human relations, ratings, sales, and promotion. Other topics include the management of cable systems and public broadcasting stations, and telecommunications law and policy.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions Requirement.

**Prerequisites:** C- or better in CMJ 236 and sophomore standing.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **CMJ 420 - Health Communication**

Theories and topics include multicultural health, doctor-patient communication, medical ethics, death & dying, support groups, and humor and positive communication in relationships. Students will learn about a variety of health communication topics and apply those topics to their own lives and their communities.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions Requirement.

**Prerequisites:** Junior or Senior standing.

**Course Typically Offered:** Variable

Credits: 3

### **CMJ 425 - Health Campaigns: Service Learning**

This is an online service-learning course that introduces students to the theory, design and implementation of health campaigns. Students will obtain practical, real-world experience working in groups with a community partner on a health campaign, helping to meet a community health need.

**Prerequisites:** Junior or senior standing.

**Course Typically Offered:** Variable

Credits: 3

### **CMJ 430 - Intercultural Communication**

Examines current research and theory in intercultural communication from a variety of approaches across a variety of settings. Understandings about the complex relationship of communication and culture will be applied to everyday experiences.

**Prerequisites:** Junior or senior standing.

**Course Typically Offered:** Spring, Odd Years

Credits: 3

### **CMJ 434 - Editorial and Opinion Writing**

Develops skills of persuasive and argumentative writing, with emphasis on disciplined logic, knowledge of subject and alternate points of view. A passing grade on Journalism Writing exam.

**Prerequisites:** CMJ 236 with a grade of B or better or permission

**Course Typically Offered:** No Regularly offered

Credits: 3

### **CMJ 435 - Feature Writing**

Develops style and proficiency in writing non-fiction newspaper and magazine articles. A passing grade on Journalism writing Exam is required.

**Prerequisites:** A grade of B or better in CMJ 236 or permission

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **CMJ 450 - Communication and Technology**

Examines and analyzes the characteristics of and influences on human communication mediated by technology such as computer networks, video conferencing.

**Prerequisites:** Junior or senior standing.

**Course Typically Offered:** Fall

Credits: 3

### **CMJ 459 - Advertising Campaigns**

Requires students to synthesize and apply knowledge and skills from all other advertising courses to create an advertising campaign.

**Prerequisites:** CMJ 355 and CMJ 356 with 'C-' or better.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **CMJ 466 - Narrative and Communication**

A study of narrative, or storytelling, as a way of communicating in conversation, oral performance and literature: what stories are told to whom, how stories are told, and the forms and functions of narrative. Considers narrative in a variety of communication

settings.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression and Writing Intensive Requirements.

**Prerequisites:** 3 hours of CMJ courses.

**Course Typically Offered:** Variable

Credits: 3

### **CMJ 470 - Communication in Organizations**

Examines research and theory of communication behavior in organizations with focus on recurring communication problems in complex organizations (including business, industrial, educational and service agencies.) Attention is given to communication training and assessment in organizations.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** Junior or senior standing.

**Course Typically Offered:** Variable

Credits: 3

### **CMJ 471 - Future of News**

At the start of the twenty-first century, the media are poised to either evolve or go extinct. How can future journalists draw from the past to shape the press of the future? What exactly is the role of the press in the ever-changing media landscape? Through readings, discussion and collaboration, students will strive to understand, analyze and redesign the roles of the press...and the meaning of news. Students will read and discuss the issues, creating a framework for analysis of the existing media and its place in the marketplace. Using historical roles of the press, students will strategize on the best way to deliver news to a 21st century public.

**Prerequisites:** Junior or Senior Standing.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **CMJ 475 - Sexualities in Mass Communication**

Systematic examination of the representation and construction of lesbian, gay, bisexual, transgender, and queer sexualities in mainstream and alternative mass media.



**Prerequisites:** Sophomore Standing

**Course Typically Offered:** Variable

Credits: 3

### **CMJ 480 - Media Theories and Research Methods**

Examines and applies major theories and research methods in mass communication, analyzing media texts, industries and audiences.

**Prerequisites:** Junior or senior standing.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **CMJ 481 - Digital Journalism**

Students will conduct intensive digital reporting and production projects on some issue of demonstrated social relevance. Structured opportunities are provided for reflection on the impact of student reporting on the wider community.

**General Education Requirements:** Satisfies the General Education Capstone Experience Requirement.

**Prerequisites:** B or better in CMJ 236, C- or better in CMJ 237 and CMJ 351, Junior or Senior Journalism Majors, and a passing grade on Journalism Writing Exam

**Course Typically Offered:** Spring

Credits: 4

### **CMJ 483 - Capstone Seminar in Mass Communication**

A seminar that draws upon and integrates formal components of students' undergraduate experience. Emphasis on the work of professionals in mass communication and on applications of mass communication research and analysis in various contexts.

**General Education Requirements:** Satisfies the General Education Writing Intensive and Capstone Experience Requirements.

**Prerequisites:** Junior or Senior Mass Communication Majors.

**Course Typically Offered:** Spring

Credits: 3

## **CMJ 484 - Investigative Journalism**

Develops professional and analytical skills in investigative journalistic reporting and writing for publication in various media formats, with an emphasis on open records and meetings, research for documentation, ethical responsibilities of investigative reporters, and in-depth presentation of individual projects.

**General Education Requirements:** Satisfies the General Education Capstone Experience Requirement.

**Prerequisites:** B or better in CMJ 236, Junior or Senior Journalism Majors, and a passing grade on Journalism Writing Exam

**Course Typically Offered:** Spring

Credits: 3

## **CMJ 485 - Capstone Seminar in Communication**

Designed to draw upon and integrate formal components of students' undergraduate experiences, with particular focus on issues of ethics, power, and communication in professional and individual contexts.

**General Education Requirements:** Satisfies the Capstone Experience and Writing Intensive Requirements.

**Prerequisites:** Communication major with senior standing.

**Course Typically Offered:** Spring

Credits: 3

## **CMJ 489 - Seminar in Media Ethics and Issues**

An advanced level course requiring extensive reading, discussion and research on the mass media and ethics, politics, economics and society.

**General Education Requirements:** Satisfies the General Education Ethics and Capstone Experience Requirements.

**Prerequisites:** CMJ 236 with a B or better, Junior or Senior Journalism majors and a passing grade on a journalism writing exam.

**Course Typically Offered:** Spring

Credits: 3

## **CMJ 491 - Advanced Topics in Journalism**

Advanced topics not regularly covered in other Journalism courses. Content varies to suit current needs. May be repeated for credit.

**Prerequisites:** CMJ 236 with a grade of B or better.

**Course Typically Offered:** Variable.

Credits: 3

## **CMJ 492 - Directed Independent Study**

For the advanced student desiring to study a particular problem under the guidance of a member of the staff. May be repeated up to 6 credits.

**Prerequisites:** permission of Department Chair.

**Course Typically Offered:** Fall & Spring

Credits: 1-3

## **CMJ 493 - Advanced Topics in Communication**

Advanced topics not regularly covered in other Communication courses. Content varies to suit current needs. May be repeated for credit.

**Prerequisites:** 3 credits of completed CMJ coursework

**Course Typically Offered:** Variable.

Credits: 3

## **CMJ 495 - Internship**

Approved work experience for departmental majors in the application of communication to practical, theoretical or research problems in any public service agency, business, or other setting approved by the department. Requirements include an initial written application showing the projected experience and its relevance to communication, conferences with faculty supervisor, periodic logs or summaries, plus a final written report. May be repeated up to 6 hours.

**Prerequisites:** Permission of Department Chair.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1-3

### **CMJ 498 - Advanced Topics in Mass Communication**

Advanced topics not regularly covered in other Mass Communication courses. Content varies to suit current needs. May be repeated for credit.

**Prerequisites:** 3 Credits of completed CMJ coursework.

**Course Typically Offered:** Variable

Credits: 3

### **COS 101 - Introduction to PC Hardware and Windows**

Topics include an overview of PC hardware, the Windows operating system, the Internet, and use of Web browsers. Does not meet Bachelor of Arts Core Distribution Area III requirement. Credit does not count towards the COS major.

**Course Typically Offered:** Not Regularly Offered

Credits: 1

### **COS 102 - Introduction to the Internet and the World Wide Web**

Topics include the structure and design of Web pages. Does not meet Bachelor of Arts Core Distribution Area III requirement. Credit does not count towards the COS major. This course assumes practical skills with the Windows operating system.

**Course Typically Offered:** Not Regularly Offered

Credits: 1

### **COS 103 - Introduction to Spreadsheets**

Topics include design and use of spreadsheets to solve problems using formulas, charts and data functions. Credit does not count towards the COS major. This course assumes practical skills with the Windows operating system.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1

### **COS 104 - Introduction of Presentation Software**

Topics include use of presentation software containing text, graphics and multimedia components to enhance presentations. Credit does not count towards the COS major. This course assumes practical skills with the Windows operating system.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1

### **COS 115 - Web Design in HTML/XHTML/CSS**

Teaches the fundamentals of Web page design using HTML/XHTML. Topics include text formatting, links, images, tables, forms and style sheets. This course assumes practical skills with the Windows operating system.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **COS 120 - Introduction to Programming I**

Topics include the development of programming skills in the novice with instruction in a sample programming language. A laboratory/recitation session is included. Credit does not count towards the computer science major. This course assumes knowledge of the Windows operating system, basic word processing, and file and folder management.

**General Education Requirements:** Satisfies the General Education Quantitative Literacy Requirement.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **COS 125 - Introduction to Problem Solving Using Computer Programming**

Students are introduced to programming as a tool for problem solving. Basic programming practices, data structures and the analysis of algorithms are introduced. A language such as Scheme, ML or Python will be used. Required for majors.

**Course Typically Offered:** Fall

Credits: 3

## **COS 140 - Foundations of Computer Science**

Introduces students to the discipline of computer science. Several core areas of computer science (e.g., digital logic, computer organization and architecture, programming languages, operating systems, computer networks, artificial intelligence, and professional ethics) are covered. In each area, particular solutions to fundamental problems in the area are studied in depth. No programming is taught in the course.

**Course Typically Offered:** Fall

Credits: 3

## **COS 198 - Topics in Computer Science**

Introductory topics in computer science not regularly covered in other courses. Content varies to suit current needs. May be repeated for credit.

**Prerequisites:** permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1-3

## **COS 211 - Principles of Data Processing**

Presents basic concepts in database management systems using a microcomputer database system and basic theory of database design. Students will construct systems in various application area. Credit does not count toward the computer science major.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **COS 213 - Advanced Excel Spreadsheet Design**

This course explores techniques in spreadsheet software as used to develop business-related applications. Topics include formulas and functions, charting, data operations, pivot tables, goal seeking, what-if analysis, management of large workbooks, and macros. The programming language VBA (Visual Basic for Applications) is introduced.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **COS 215 - Introduction to Computing Using FORTRAN**

Programming logic and techniques using FORTRAN including introductory hardware concepts. Students are assigned programs from various areas of application. Credit does not count towards the computer science major. NOTE: Degree credit will not be given for both COS 215 and COS 220.

**Course Typically Offered:** Spring

Credits: 3

### **COS 216 - Web Design in JavaScript**

This course covers advanced web design using XHTML, cascading style sheets, and client-side programming with JavaScript to create menus, rollovers, form validations, dynamic objects, and other topics.

**Prerequisites:** COS 115.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **COS 220 - Introduction to C++ Programming**

Topics include programming techniques with a brief introduction to hardware concepts as they apply to software development. Students are assigned programs emphasizing numerical algorithms for implementation in the C++ language. Assumes knowledge of the Windows operating system, basic word processing, and file and folder management. Some prior experience in programming logic, macros, or scripting is recommended. NOTE: Degree credit will not be given for both COS 220 and COS 215.

**General Education Requirements:** Satisfies the General Education Quantitative Literacy Requirement.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **COS 221 - Data Structures in C++**

This course introduces object-oriented programming techniques and data structures in C++. Topics include class design, dynamic memory management, lists, stacks, queues, trees. STL, algorithm efficiency, searching and sorting algorithms.

**Prerequisites:** COS 220 or ECE 177.

**Course Typically Offered:** Fall

Credits: 3

## **COS 225 - Object-Oriented Design, Programming and Data Structures**

Introduces the student to the fundamental principles of object-oriented design and programming using a high-level object-oriented language. Focuses on the specification, design, and implementation of classes and the interactions between classes, inheritance, abstract classes, and polymorphism. Introduces fundamental data structures including stacks, queues, lists, and binary trees.

**Prerequisites:** COS 125 and one year of programming.

**Course Typically Offered:** Spring

Credits: 4

## **COS 226 - Introduction to Data Structures**

Introduces the student to the fundamental principles of data structure usage, specification, and implementation using a high-level, object-oriented language. Driven by the use of object-oriented techniques for program specification and modeling. Focuses on how data structure implementation choices affect and are affected by application needs.

**Prerequisites:** COS 225.

**Course Typically Offered:** Fall

Credits: 3

## **COS 235 - Computer Architecture**

Examines the architecture and organization of the computer including digital logic, the CPU, busses, internal and external memory, computer number representation and computer instructions. Particular attention is paid to assembly and C languages as a mechanism for better understanding the architecture.

**Prerequisites:** COS 140 or permission

**Course Typically Offered:** Spring



Credits: 4

### **COS 250 - Discrete Structures**

Introduction to discrete structures used in various areas of computer science. Topics include logic, sets, relations, functions, cardinality, enumeration, and computability.

**Prerequisites:** COS 225, MAT 126.

**Course Typically Offered:** Fall

Credits: 3

### **COS 298 - Topics in Computer Science**

Introductory topics in computer science not regularly covered in other courses. Content varies to suit current needs. May be repeated for credit.

**Prerequisites:** Permission.

**Course Typically Offered:** Variable

Credits: 1-3

### **COS 301 - Programming Languages**

Formal description of programming languages including specification of syntax and semantics. Discussion of infix, prefix, and postfix notation with translation techniques. Topics include branching, grouping of statements, storage allocation, list and string processing, relation of language design to efficiency.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** COS 226 and COS 250.

**Course Typically Offered:** Fall

Credits: 3

### **COS 312 - An Introduction to Video Game Programming with the Unity Game Engine**

A high-level approach to game programming uses one of the game engines commonly employed by game-development companies. Among these is Unity, a game engine that can create standalone video games for PCs and Macs, as well as versions playable in a web-page environment. Built-in tools include character controllers, cameras, lights, shaders, a powerful physics engine, terrain editors, tree generators, and more. Many of these are scripts written in Javascript, C#, or Boo. While many of the exercises stress the scripting aspects of working with Unity, a student who is a beginning programmer can create significant game content using only the pre-packages assets that are a standard part of the Unity system.

**Prerequisites:** COS 125

**Course Typically Offered:** Fall

Credits: 3

## **COS 331 - Operating Systems**

Study of the structure of current computer operating systems. Topics include I/O management, memory management, multiprogramming, linking loaders, real and virtual systems, batch and time sharing.

**Prerequisites:** COS 226, COS 335 or permission.

**Course Typically Offered:** Fall

Credits: 3

## **COS 350 - Data Structures and Algorithms**

Introduction to abstract data types as a unifying concept in the study of data structures. Topics include lists, queues, multi-linked lists, priority queues, trees, and graphs. The impact of these structures on algorithm design is explored. External memory management is discussed.

**Prerequisites:** COS 226 and COS 250.

**Course Typically Offered:** Spring

Credits: 3

## **COS 397 - Computer Science Capstone 1**

The first of a two-course sequence, designed to guide students in proposing the Capstone project in either an independent study, group project, or field experience format. The focus is on the early stages of project work, including finding a suitable topic and project advisor, investigating related work, and writing a thorough project proposal. The relevant skills are covered and practiced by studying a collection of classic and topical papers.

**General Education Requirements:** Upon completion of the two course sequence (COS 397 & COS 497), satisfies the General Education Writing Intensive and Capstone Experience Requirements.

**Prerequisites:** COS Majors with at least Junior standing and permission.

**Course Typically Offered:** Fall

Credits: 3

## **COS 398 - Topics in Computer Science**

Topics not regularly covered in other courses. Content varies to suit current needs. May be repeated for credit.

**Prerequisites:** permission.

**Course Typically Offered:** Fall & Spring

Credits: 1-3

## **COS 415 - Computer Simulation and Modeling, from Development to Display**

The process of designing and using a computer model is examined in detail. The development of the model equations, numerical techniques for solving them, and basic graphical techniques for displaying the results of the calculations will be presented.

**Prerequisites:** Familiarity with a programming language or permission

**Course Typically Offered:** Spring

Credits: 3

## **COS 420 - Introduction to Software Engineering**

A broad view of software engineering which introduces a variety of software engineering techniques which can be applied to practical software projects. Topics include process models, human factors, software specification; software design, programming techniques and tools, and validation.

**Prerequisites:** COS 331 or permission; junior standing.

**Course Typically Offered:** Spring

Credits: 3

## **COS 430 - Introduction to Cybersecurity**

An overview of Cybersecurity as information security, policies, guidelines, and legal issues; the nature of network and computer attacks, system vulnerabilities and defense; implementation issues in Unix/Linux. Projects include system setup, attack, and defense.

**Prerequisites:** COS 235 and COS 331.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

## **COS 440 - Computer Networks I**

Covers data and computer communications using ISO model. Discussion of physical media, communication protocols, and network architectures including wide area and local area networks. Includes examples of networks currently in use.

**Prerequisites:** COS 331 or permission.

**Course Typically Offered:** Fall

Credits: 3

## **COS 451 - Automata, Computability, and Languages**

Fundamentals of formal languages and the mathematical theory of computation; finitestate automata, nondeterminism, regular expressions, and Kleene's Theorem; context-free grammars, pushdown automata, the correspondence theorem and the pumping lemma; computability, Turing machines, and the halting problem.

**Prerequisites:** COS 250.

**Course Typically Offered:** Spring

Credits: 3

## **COS 460 - Interactive Computer Graphics**

Topics include graphic I/O devices: plotter, CRT, and light pen; vector generation; transformation of two/and three-dimensional objects; clipping and windowing; hidden line removal; interrupt handling; interactive techniques; data structures for graphics; and various display algorithms.

**Prerequisites:** COS 226 or equivalent and MAT 126 and junior standing or permission.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

## **COS 470 - Introduction to Artificial Intelligence**

Surveys fundamental areas of research in Artificial Intelligence including knowledge representation, vision, planning, logic, learning, expert systems, and natural language comprehension as well as techniques including predicate calculus, backtracking, tree searching, and semantic networks. Also covers LISP, a principal Artificial Intelligence programming language.

**Prerequisites:** COS 350 or permission.

**Course Typically Offered:** Fall

Credits: 3

## **COS 480 - Database Management Systems**

Covers database management systems from the perspective of database designers and database application programmers. Topics include Entity-Relationship modeling, relational databases, transactions and isolation, and Web-database applications. Includes both individual programming assignments and semester-long group projects culminating in demonstrations of substantial database application.

**Prerequisites:** COS 350 or permission.

**Course Typically Offered:** Fall

Credits: 3

## **COS 490 - Computers, Ethics and Society**

Consideration of human and social consequences of technological development and application of computers, ethical questions of computer use, professional ethics.

**General Education Requirements:** Satisfies the General Education Ethics and Writing Intensive Requirements.

**Prerequisites:** COS 331, ENG 317.

**Course Typically Offered:** Fall

Credits: 3

## **COS 495 - Field Experience**

A pre-planned work experience of no less than ten and preferably more weeks in a commercial environment, with faculty supervision. Normally a paid work experience. A presentation open to interested faculty, staff and students might be required at the completion of the project. May be repeated for a maximum of 3 credit hours. (Pass/Fail Grade Only.)

**General Education Requirements:** Satisfies the General Education Capstone Experience Requirement.

**Prerequisites:** Normally a student must complete COS 301, COS 420, COS 431 and preferably COS 350, with at least a grade of "C" and permission.

**Course Typically Offered:** Not Regularly Offered

Credits: 1-3

## **COS 497 - Computer Science Capstone 2**

The second of a two-course sequence, designed to guide students in completing the Capstone project in either an independent study, group project, or field experience format. The focus is on the later stages of project work, including completing the programming tasks, evaluating the implemented systems, documenting all work in a project report, demonstrating the work in action, and making a public oral presentation. The relevant skills are covered and practiced by studying a collection of classic and topical papers.

**General Education Requirements:** Upon completion of the two course sequence (COS 397 & COS 497), satisfies the General Education Writing Intensive and Capstone Experience Requirements.

**Prerequisites:** COS Majors with Senior standing, COS 397, and permission.

**Course Typically Offered:** Spring

Credits: 3

## **COS 498 - Topics in Computer Science**

Topics not regularly covered in other courses. Content varies to suit current needs. May be repeated for credit.

**Prerequisites:** One semester of programming.

**Course Typically Offered:** Fall & Spring

Credits: 1-3

## **COS 499 - Senior Project**

An undergraduate research project in computer science under the direction of an approved advisor. An individual or small group will work on the conception, design and implementation of a significant computer science project. A presentation, open to interested faculty, staff and students may be required at the completion of the project.

**General Education Requirements:** Satisfies the General Education Capstone Experience Requirement.

**Prerequisites:** permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

## **CSD 100 - Majoring in Communication Sciences and Disorders**

Intended to help first-year students, with an interest in majoring in Communication Sciences and Disorders, adjust to being a college student at the University of Maine during the first semester. In a small and informal class setting, students will learn about university resources and develop skills designed to achieve success. Students will learn more about their intended major, be introduced to department faculty, and the professions of speech-language pathology and audiology.

**Prerequisites:** First Year standing in Communication Sciences and Disorders.

**Course Typically Offered:** Fall

Credits: 1

## **CSD 101 - American Sign Language I**

Introduction to American Sign Language syntax, morphology, phonology, history and culture. Focus on dialogue.

**Prerequisites:** Junior or Senior CSD majors or permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

## **CSD 102 - American Sign Language II**

Continuation of skill building in American Sign Language syntax, morphology, phonology, cultural awareness. Focus on monologue.

**Prerequisites:** C or better in CSD 101 or permission.

**Course Typically Offered:** Variable

Credits: 3

### **CSD 108 - Directed Speech Improvement**

Individualized evaluation and self-improvement programs focused on the spoken communication needs of students presenting problems in language, speech, fluency, voice, or hearing. May be repeated for credit.  
(Pass/Fail Grade Only.)

**Prerequisites:** permission of coordinator, Conley Speech and Hearing Center.

**Course Typically Offered:** Not Regularly Offered

Credits: 1

### **CSD 130 - Introduction to Communication Sciences and Disorders**

A survey of the major disorders of language, speech and hearing with attention to their recognition and the principles of their treatment. Recommended for all teachers.

**Prerequisites:** Not open to first semester first-year students.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **CSD 222 - International and National Issues of Language Usage**

Exploration of linguistic variation including dialects and minority languages; interplay of language, society and personhood; language as a carrier of cultural values; and issues of bilingualism and multilingualism. Includes focus on language and personal identity within immigrant and ethnic experiences. Focus is global as well as North American.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** ENG 101 and sophomore standing.

**Course Typically Offered:** Spring

Credits: 3

### **CSD 300 - Clinical Observation in Communication Sciences and Disorders**



Introduction to principles of clinical observation in Communication Sciences and Disorders emphasizing the development of identification, description, and inferencing skills through supervised observations. Required of all majors.

**Prerequisites:** Communication Sciences and Disorders Major and Junior Standing.

**Course Typically Offered:** Spring

Credits: 1

### **CSD 301 - Introduction to Clinical Audiology**

An introduction to principles of acoustics as a basis for understanding hearing assessment. Development of ability to read and interpret audiograms as well as the results from a hearing evaluation. Includes pure tone and speech audiometry, acoustic immittance and reflex testing.

**Prerequisites:** CSD 130.

**Course Typically Offered:** Fall

Credits: 3

### **CSD 380 - Language Development**

Study of the development of language and literacy from birth to adulthood. Emphasis on foundations of linguistics relative to emerging language in children.

**Prerequisites:** CSD 130 or INT 410 or permission.

**Course Typically Offered:** Fall

Credits: 3

### **CSD 381 - Later Language Development**

Study of the sequential aspects of language and literacy development from the preschool years to early adulthood with emphasis on biological, psychological, and sociological foundations.

**Prerequisites:** CSD 130, CSD 380 or permission.

**Course Typically Offered:** Spring

Credits: 3

### **CSD 383 - Anatomy and Physiology of the Speech Mechanism**

Study of the structures, muscular system, nervous system and underlying mechanisms required for breathing, phonation, articulation and language. Emphasis on normal neurophysiological function with attention to organic pathologies affecting speech and language.

**Prerequisites:** CSD 130; junior standing.

**Course Typically Offered:** Fall

Credits: 3

### **CSD 481 - Phonological Development and Phonetics**

Exploration of phonological theory using examples from a variety of languages and study of normal phonological development. Emphasis on acquisition, understanding and use of phonetic transcription skills.

**Prerequisites:** INT 410 or CSD 380; limited to Communication Sciences and Disorders majors with junior standing.

**Course Typically Offered:** Fall

Credits: 4

### **CSD 482 - Neuroscience for Communication Disorders**

This course introduces students to the study of neuroanatomy and physiology underlying speech and language. The course focuses on the anatomy and physiology of the nervous systems in normal individuals, and on structures and functions of motor and sensory systems. The relationship between knowledge of the neuroanatomy and physiology as it relates to diagnosis and treatment of various neurogenic disorders will be emphasize.

**Prerequisites:** CSD 383

**Course Typically Offered:** Spring

Credits: 3

### **CSD 484 - Introduction to Speech Science**

Introduces research findings on the importance of acoustical, physiological, and perceptual factors in speech production and perception. Methodology and instrumentation employed in such research are surveyed.

**Prerequisites:** CSD 383 or permission; Communication Sciences and Disorders major with junior senior standing.

**Course Typically Offered:** Spring

Credits: 3

### **CSD 487 - Disorders of Speech and Language**

A study of the description, evaluation and therapeutic intervention of speech and language disorders in pediatric and adult populations.

**Prerequisites:** CSD 130; Communication Sciences and Disorders major with junior standing.

**Course Typically Offered:** Spring

Credits: 3

### **CSD 490 - Senior Capstone: The Research Process**

First of a two-semester course sequence on the research process in communication disorders emphasizing principles of research, scientific and professional writing, and the foundations for professionalism and ethical decision making. Required of all CSD Majors.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** Limited to Communication Sciences and Disorders Majors with Senior Standing and at least 9 hours of 300 and/or 400 level CSD coursework.

**Course Typically Offered:** Fall

Credits: 3

### **CSD 491 - Senior Capstone: The Clinical Process**

Second of a two-course sequence on the clinical process in communication sciences and disorders with the primary emphasis on clinical problem solving, decision making, and developing clinical expertise. Required of all CSD majors.

**General Education Requirements:** Satisfies the General Education Capstone Experience Requirement.

**Prerequisites:** CSD 490. Limited to Communication Sciences and Disorders majors with senior standing.

**Course Typically Offered:** Spring

Credits: 3

### **CSD 497 - Special Topics in Communication Sciences and Disorders**

For the advanced student desiring to study a particular topic under the guidance of a member of the CSD faculty. May be repeated for credit.

**Prerequisites:** Permission.

**Course Typically Offered:** Fall & Spring

Credits: 1-3

### **CSD 498 - Directed Study in Communication Sciences and Disorders**

Directed study or research with a member of the CSD faculty. May be repeated for credit.

**Prerequisites:** permission.

**Course Typically Offered:** Variable

Credits: 1-3

### **DAN 101 - Beginner Modern Dance I**

Fundamental concepts and practice of modern dance technique: body alignment, stretch/strengthening, movement vocabulary, body coordination, musicality and spatial awareness. For the general student at the beginning dance level. Previous dance training. May be repeated for credit.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Course Typically Offered:** Fall & Spring

Credits: 2

### **DAN 102 - Beginner Ballet I**

An introduction to classical ballet dance training. Traditional exercises at the barre and on center floor emphasize body placement, flow of energy, and the creation of expressive movement in space. For the performing artist or general student. May be repeated for credit.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Course Typically Offered:** Fall & Spring

Credits: 2

### **DAN 103 - Beginner Jazz I**

Fundamentals of jazz dance technique with emphasis on body alignment, coordination and movement vocabulary. Preparation for expressive movement in relation to modern jazz music. May be repeated for credit.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Course Typically Offered:** Fall & Spring

Credits: 2

### **DAN 105 - Beginner Tap**

Teaches the fundamentals of Rhythm tap and Broadway Styles technique with emphasis on body alignment, flexibility, strength, rhythm, coordination and movement vocabulary. Expressive movement is encouraged. May be repeated for credit.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Course Typically Offered:** Fall & Spring

Credits: 2

### **DAN 112 - Production/Rehearsal**

Dance production and performance with emphasis on repertory, costuming, lighting in relation to choreography, staging, publicity and rehearsal. May be repeated with permission.  
(Pass/Fail Grade Only.)

**Prerequisites:** audition or permission.

**Course Typically Offered:** Spring

Credits: 1

## **DAN 121 - Beginner Modern Dance II**

Builds upon the fundamental concepts and practice of modern dance technique focusing on body alignment, stretch, strengthening, movement vocabulary, coordination, musicality and spatial awareness. Further emphasis on longer dance phrases and musicality. May be repeated for credit.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Prerequisites:** DAN 101 or permission.

**Course Typically Offered:** Fall & Spring

Credits: 2

## **DAN 122 - Beginner Ballet II**

Builds upon the fundamentals of classical ballet technique with emphasis on alignment, flexibility, strength, coordination and movement vocabulary. Expressive movement, the execution of ballet 'line', and performance of longer dance phrases will be encouraged. May be repeated for credit.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Prerequisites:** DAN 102 or permission.

**Course Typically Offered:** Fall & Spring

Credits: 2

## **DAN 123 - Beginner Jazz II**

Builds upon the fundamentals of lyrical jazz technique and contemporary jazz styles with emphasis on alignment, coordination, and movement vocabulary. Expressive movement in relation to modern jazz music and performance of longer dance phrases will be encouraged. May be repeated for credit.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Prerequisites:** DAN 103 or permission.

**Course Typically Offered:** Spring

Credits: 2

## **DAN 130 - Ballroom and World Dance Forms**

From swing to salsa and waltz to tango, basic social and Latin dance, with emphasis on alignment, coordination, and movement vocabulary. Additional exposure to Afro-Caribbean roots of today's dance forms. May be repeated for credit.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Course Typically Offered:** Variable

Credits: 2

## **DAN 201 - Intermediate Modern Dance**

Continuation of DAN 121. Emphasis on solving more complex movement problems. Provides an enhanced movement vocabulary and further principles of body alignment, stretch/strengthening and musicality and expressiveness. May be repeated for credit.

**Prerequisites:** DAN 121 or permission.

**Course Typically Offered:** Fall & Spring

Credits: 2-3

## **DAN 202 - Intermediate Ballet**

A detailed study of ballet form for the student with some previous training. Students master the execution of exercises and steps with speed, clarity and grace in order to achieve a fuller kinesthetic awareness. Can be used as a base for professional training or general artistic enrichment. May be repeated for credit.

**Prerequisites:** DAN 122 or permission.

**Course Typically Offered:** Fall & Spring

Credits: 2-3

## **DAN 203 - Intermediate Jazz**

A continuation of DAN 123. Further development of principles of movement within the jazz idiom: body alignment, musicality, phrasing, stylistic form and performance awareness. May be repeated for credit.

**Prerequisites:** DAN 123 or permission.

**Course Typically Offered:** Fall & Spring

Credits: 2

### **DAN 205 - Intermediate Tap**

Expands upon the fundamentals of Rhythm Tap and Broadway Styles technique. Complex rhythmic patterns, breaks, and longer combinations are encouraged. May be repeated for credit.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Prerequisites:** DAN 105 or permission.

**Course Typically Offered:** Spring

Credits: 2

### **DAN 250 - Dance Composition I**

Study of the principles and elements of choreography. Provides guided practice in the construction of movement phrases, and studies for solo and group dances. Includes an informal studio presentation of student pieces.

**Prerequisites:** Prior dance experience or permission.

**Course Typically Offered:** Fall

Credits: 3

### **DAN 266 - Dance History**

Religious, social and cultural aspects of dance from lineage-based ritual to the present century.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **DAN 270 - Pilates Conditioning and Functional Anatomy**

Teaches mat work to enhance strength, flexibility, and breath. Further work into the function of the skeletal-muscular-neurological systems as they apply to movement efficiency and somatics.



**Course Typically Offered:** Fall

Credits: 3

### **DAN 297 - Introductory Topics in Dance**

Provides an opportunity for introductory level exploration within a particular dance form, tradition or innovation not covered within the existing course offerings. Specific topics will vary semester to semester. May be repeated for credit.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Prerequisites:** Permission.

**Course Typically Offered:** Fall & Spring

Credits: 2

### **DAN 397 - Intermediate Topics in Dance**

Provides an opportunity for intermediate level exploration within a particular dance form, tradition or innovation not covered within the existing course offerings. Specific topics will vary semester to semester. May be repeated for credit.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Prerequisites:** Permission.

**Course Typically Offered:** Variable

Credits: 2

### **DAN 497 - Advanced Topics in Dance**

Provides an opportunity for advanced level exploration within a particular dance form, tradition or innovation not covered within the existing course offerings. Specific topics will vary semester to semester. May be repeated for credit.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Prerequisites:** Permission.

**Course Typically Offered:** Variable

Credits: 2

## **DAN 498 - Dance Project/Thesis**

A supervised practicum in choreographic process and/or performance accompanied by a written analysis of this practicum. An advanced level research topic, designed jointly by the student and the instructor.

**Prerequisites:** Advanced level technique or permission.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **DIS 300 - Disability: Interaction of Human Diversity and Global Environment**

Designed to introduce the student to disability as an element of human diversity that has a significant reciprocal relationship with the environment. We begin by discussing prevalence and incidence of disability across the globe, examine the historical changes in concepts of disability over time, and then study disability as a human phenomenon which both emerges from and influences biological, economic, physical, social, political, spiritual, cultural, technological and virtual environments.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives and Population and the Environment Requirements.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

## **DIS 400 - Disability as Diversity I**

Examines disability history, theory and current thinking in the field of disability studies. Through interdisciplinary interchange and experiential learning, students will explore the lived experience of people with disabilities and their families across the lifespan, examine and debate ethical dilemmas related to disability, and analyze implicit disability related values reflected in diverse academic and professional fields. Students will apply their learning to their own disciplines.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives and Ethics Requirements.

**Course Typically Offered:** Fall

Credits: 3

## **DIS 450 - Disability: Population-Environment Diversity**

Consistent with contemporary literature and research in the interdisciplinary field of disability studies, students will examine and analyze disability as an interactive disjuncture between the environment, the human body and population groups. Students will analyze how environments shape and are shaped by disability populations and will focus on realigning bodies, populations and environments to advance full participation, reduce personal and environmental harm reductions, and preserve just and safe environments. Included will be natural, virtual, service, economic, social, policy, and community environments across the globe.

**General Education Requirements:** Satisfies the General Education Population and the Environment Requirement.

**Course Typically Offered:** Spring

Credits: 3

### **DIS 470 - Interdisciplinary Project in Disability Studies**

Provides the opportunity for students to apply knowledge about disability to the actualization of a disability-related project in the student's area of interest. With guidance from the DIS 470 instructor and the student's advisor, students may participate in ongoing projects or identify new disability-related areas for project activity. Students may take this course to complete the requirements for the disability concentration or to work with guidance on a project of interest. Provides the opportunity for collaboration across disciplines.

**Prerequisites:** DIS 400 and DIS 450 or permission.

**Course Typically Offered:** Variable

Credits: 1-6

### **DIS 480 - Independent Project in Disability Studies**

Individual work on a topic or problem selected by the student. Primarily for students in the Interdisciplinary Concentration in Disability Studies.

**Prerequisites:** permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1-6

### **ECE 100 - Electrical and Computer Engineering Seminar**

Introduces first year and transfer students to different aspects of Electrical Engineering and Computer Engineering programs and exploration of career paths and professional responsibilities. Presentations will be made by the instructor, faculty, and industry speakers.

**Course Typically Offered:** Fall

Credits: 1

## **ECE 101 - Introduction to Electrical and Computer Engineering**

Introduction to information and concepts of general use in Electrical and Computer Engineering. Topics include: basic use of personal computers, mathematical concepts, development of problem solving skills with professional communication. Students work in teams on projects involving digital and motor control.

**Prerequisites:** Computer Engineering and Electrical Engineering majors only or permission.

**Course Typically Offered:** Fall

Credits: 3

## **ECE 177 - Introduction to Programming for Engineers**

Introduction to computer programming with emphasis on algorithms and an understanding of underlying hardware. Topics include syntax, variables, control structures, pointers, operators, functions, and input and output.

**Prerequisites:** ECE 101 and MAT 126.

**Course Typically Offered:** Spring

Credits: 4

## **ECE 198 - Selected Topics in Electrical and Computer Engineering**

Topics in electrical engineering not regularly covered in other courses. May include ECE topics suitable for advanced first-year students. Content can be varied to suit current needs.

**Prerequisites:** permission.

**Course Typically Offered:** Spring

Credits: 1-3

## **ECE 209 - Fundamentals of Electric Circuits**

Basic circuit laws and theorems, operational amplifiers, natural and forced response of first order circuits, phasors and steady-state AC circuits, 3 phase circuits. For non-majors. Lec 3.

**Prerequisites:** MAT 127, PHY 122.

**Course Typically Offered:** Spring, Summer

Credits: 3

## **ECE 210 - Electric Circuits**

Topics include: Basic circuit laws and theorems, nodal analysis, op-amps, natural and forced responses of first and second order systems, phasor concepts, solution of steady-state AC circuits, AC power calculations, frequency response, basic filters, Bode plots, two port parameters.

**Prerequisites:** MAT 127

**Corequisites:** PHY 122

**Course Typically Offered:** Fall & Spring

Credits: 4

## **ECE 211 - Electrical Networks II**

Natural and forced responses of second order systems, polyphase circuits, magnetically coupled circuits, frequency domain analysis, Bode plots, two-port parameters, Fourier series applications. Lec 3 (Spring.)

**Prerequisites:** ECE 210, MAT 228.

**Course Typically Offered:** Spring

Credits: 3

## **ECE 214 - Electrical Circuits Laboratory**

Lab exercise and circuit simulations demonstrate concepts presented in ECE 210. Participants become familiar with circuit simulation, safety and grounding considerations, instrumentation, e.g., oscilloscopes, signal sources, multimeters, and signal analyzers. Also of particular significance will be the development of technical writing skills.

**General Education Requirements:** Satisfies the General Education Writing Intensive.

**Prerequisites:** ECE 210

**Course Typically Offered:** Spring

Credits: 2

### **ECE 271 - Microcomputer Architecture and Applications**

The microcomputer and its component parts including microprocessors, registers, memory and I/O. Programming in C and Assembly and applying the microcomputer in engineering systems. Lec 3.

**Prerequisites:** ECE 177.

**Course Typically Offered:** Spring

Credits: 3

### **ECE 275 - Sequential Logic Systems**

Methods of design and testing for logic systems with memory. Includes procedures and the design of system tests, combinational design, multi-level circuits, logic minimization, sequential design, analysis and optimization and the use of computer tools for logic design. Lec 3. (Fall.)

**Prerequisites:** ECE 177.

**Course Typically Offered:** Fall

Credits: 3

### **ECE 300 - Seminar**

Exploration of career opportunities, organizational structure of industry and professional responsibilities. Lec 1. (Fall.) (Pass/Fail Grade Only.)

**Prerequisites:** Junior standing.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1

### **ECE 314 - Signals and Systems**

Analysis of continuous linear time-invariant systems including Fourier series, Fourier transforms, Laplace transform techniques and their applications; transformation and properties of continuous signals and systems, convolution, transfer functions and state variable system representations.

**Prerequisites:** MAT 258 and a grade of C- or better in ECE 210.

**Course Typically Offered:** Spring

Credits: 3

### **ECE 316 - Random Signal Analysis**

This course introduces the fundamental concepts of random signal analysis based on probability theory and random processes. It presents the mathematical and engineering tools to analyze and interpret random events occurring in natural phenomena, games, sciences, and engineering.

**Prerequisites:** MAT 228.

**Course Typically Offered:** Fall

Credits: 3

### **ECE 323 - Electric Power Conversion**

AC/DC power conversion, linear and switching power supplies, magnetic circuits, inductors, transformers, fundamentals of electromechanical energy conversion, basic properties of electric motors.

**Prerequisites:** ECE 214 and at least a C- in ECE 210.

**Course Typically Offered:** Fall

Credits: 3

### **ECE 331 - Introduction to Unix Systems Administration**

Topics include hardware and devices, file systems, user management, backup and recovery, application management, and network services such as NFS, NIS, DNS, DHCP, electronic mail and web servers. Problem solving and diagnostic methods, performance tuning, legal and professional issues, ethics and policies and security aspects of hosts on the Internet are discussed. Students gain hands-on experience and complete a project.

**Prerequisites:** COS 220 or ECE 177.

**Course Typically Offered:** Spring

Credits: 3

## **ECE 342 - Electronics I**

Investigates semiconductor fundamentals of the p-n junction, BJT and MOSFET. Static and low frequency dynamic models are developed and utilized in design and analysis. Explores basic electronic circuit building blocks based on diodes, BJT's MOSFET's and fully-compensated op-amps.

**General Education Requirements:** Together with ECP 342, this course satisfies the General Education Writing Intensive requirement.

**Prerequisites:** A grade of C- or better in both ECE 210 and ECE 214

**Course Typically Offered:** Fall

Credits: 4

## **ECE 343 - Electronics II**

Introduces design and analysis of semiconductor circuits. Analog networks include amplifiers, power supplies and oscillators. Digital efforts are concentrated in the CMOS and pseudo-NMOS areas with a brief look at the BJT logic. Explores basic concepts of frequency response, feedback and data conversion. Lec 3, Lab 3. (Spring.)

**Prerequisites:** ECE 342.

**Course Typically Offered:** Spring

Credits: 4

## **ECE 351 - Fields and Waves**

Topics include: Transmission lines and wave propagation with special emphasis on transverse electromagnetic waves in dielectric and lossy media, complex numbers, vectors, phasors, vector calculus, Smith Chart, electrostatics, magnetostatics, Gauss's laws, Faraday's law, Ampere's law, Maxwell's equations, properties of dielectric and ferromagnetic materials, time varying fields, wave reflection and transmission, waveguides, radiation.

**Prerequisites:** MAT 228 and C- or better in ECE 210.

**Course Typically Offered:** Spring

Credits: 3



## **ECE 394 - Electrical and Computer Engineering Practice**

Work experience in electrical engineering and/or computer engineering. May be repeated for credit. (Fall, Spring and Summer.) (Pass/Fail Grade Only.)

**Prerequisites:** sophomore standing and permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1-3

## **ECE 401 - Electrical Engineering Design Project**

First of a three semester sequence of courses involving the design, implementation and reporting of an engineering device, system or software package by an individual student or small group. Part one: project selection, feasibility studies and proposal writing. (Spring.)

**Prerequisites:** ECE 342 and either ECE 314 or ECE 351; Electrical Engineering Majors

**Course Typically Offered:** Variable

Credits: 1

## **ECE 402 - Electrical Engineering Design Project**

Second of a three semester sequence of courses involving the design, implementation and reporting of an engineering device, system or software package by an individual student or small groups. Part two: resource location, module debugging, prototype testing. (Fall.)

**Prerequisites:** ECE 401; Electrical Engineering Majors

**Course Typically Offered:** Fall, Spring, Summer

Credits: 4

## **ECE 403 - Electrical and Computer Engineering Design Project**

Third of a three semester sequence of courses involving the design, implementation and reporting of an engineering device, system or software package by an individual student or small group. Part three: written and oral presentation of the completed project.

**General Education Requirements:** Satisfies the General Education Writing Intensive and Capstone Experience Requirements.

**Prerequisites:** ECE 402 or ECE 406.

**Course Typically Offered:** Fall & Spring

Credits: 2

## **ECE 405 - Computer Engineering Design Project**

First of a three semester sequence of courses involving the design, implementation and reporting of an engineering device, system or software package by an individual student or small group. Part one: project selection, feasibility studies and proposal writing.

**Prerequisites:** Computer Engineering Majors, ECE 271 and any two of the following courses - ECE 342, ECE 471, ECE 473, and ECE 477.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1

## **ECE 406 - Computer Engineering Design Project**

Second of a three semester sequence of courses involving the design, implementation and reporting of an engineering device, system or software package by an individual student or small groups. Part two: resource location, module debugging, prototype testing.

**Prerequisites:** Computer Engineering Majors, ECE 405 and ECE 214

**Course Typically Offered:** Fall, Spring, Summer

Credits: 4

## **ECE 414 - Feedback Control Systems**

Analysis and design of continuous control systems using transfer function and state variable system representations. Covers signal flow graphs and Mason's gain formula, decomposition of transfer functions, controllability and observability, root locus techniques, Routh-Hurwitz criterion, Nyquist criterion, controller design in time and frequency domains, State feedback, phase lead and lag controllers, PID type controllers.

**Prerequisites:** ECE 314

**Course Typically Offered:** Spring

Credits: 3

## **ECE 417 - Introduction to Robotics**

Introduces robotics and operation of microcomputer-controlled manipulators with their applications in automation. Includes a general review of robot structure, current application of robots in automation, spatial descriptions and coordinate transformations, manipulator kinematics and solutions, robot control and path planning, dynamics and vision in robot application. Lec 2, Lab 3. (Fall.)

**Prerequisites:** MAT 228 and ECE 177 or COS 220.

**Course Typically Offered:** Fall

Credits: 3

## **ECE 427 - Electric Power Systems**

Power system models, power flow solutions, fault analysis, protective relaying.

**Prerequisites:** At least a C- in ECE 210.

**Course Typically Offered:** Spring

Credits: 3

## **ECE 444 - Analog Integrated Circuits**

Considers topics in the internal circuit design and system applications of analog integrated circuits. Concerns addressed include temperature and power supply sensitivity, gain, bandwidth, stability and I/O characteristics. Specific topics include current sources, differential amplifiers, level shifters, op-amps, regulators and phase-locked loops. Lec 3. (Spring.)

**Prerequisites:** ECE 314 and ECE 343.

**Course Typically Offered:** Spring

Credits: 3

## **ECE 445 - Analysis and Design of Digital Integrated Circuits**

Reviews device characteristics with emphasis on switching behavior. Considers ramifications of need for designs to be compatible with IC processing technology. Emphasis on CMOS and ECL based systems. Explores interface and optimization problems as related to timing and loading. Brief look at significant parameters needed for accurate computer modeling. Lec 3.

(Fall.)

**Prerequisites:** ECE 342.

**Course Typically Offered:** Fall

Credits: 3

## **ECE 450 - Power Electronics**

This course is an introduction to switch-mode power conversion. This course covers analysis and control of dc-dc converters, buck converters, boost converters, buck-boost converters, forward converters, flyback converters, dc-ac inverters for motor drives, interfacing renewable energy sources with utility, ac-dc rectifiers, and introduction to power semiconductor devices and magnetic components.

**Prerequisites:** ECE 314

**Course Typically Offered:** Spring

Credits: 3

## **ECE 451 - Power Electronics Lab**

This lab is an introduction to switch-mode power conversion. This lab introduces students to buck converters, boost converters, buck-boost converters, forward converters, flyback converters, control of dc-dc converters, and switching waveforms from mosfets to diodes.

**Prerequisites:** ECE 314

**Corequisites:** ECE 450

**Course Typically Offered:** Spring

Credits: 1

## **ECE 453 - Microwave Engineering**

Topics include: rectangular and cylindrical waveguides, transmission line models, impedance matching, Smith chart methods, microwave circuits and components, s-parameter measurement techniques and antennas. (Spring.)

**Prerequisites:** ECE 351.

**Course Typically Offered:** Spring

Credits: 4

### **ECE 455 - Electric Drives**

This course is an introduction to electric drive and their control. The course covers mechanical dynamics associated with electric drive systems, analysis and control of DC motors, induction motors, and permanent magnet AC motors, four quadrant motor operations, feedback control design for torque, speed and position.

**Prerequisites:** ECE 314

**Course Typically Offered:** Fall

Credits: 3

### **ECE 456 - Electric Drives Lab**

This lab is an introduction to electronic drives and their control. The lab course will introduce characterization of DC motors, and current, torque, and speed control of DC motors. The lab will also introduce characterization of induction motors and V/f speed control. Lastly the lab will introduce control of permanent magnet AC motors.

**Prerequisites:** ECE 314.

**Corequisites:** ECE 455.

**Course Typically Offered:** Fall

Credits: 1

### **ECE 457 - Nanoscience**

An introduction to nanoscience that details the basic principles and recent developments of nanoscale science and technology. Students will learn both the fundamental concepts of nanoscale science and its application to the development of new materials, processes technology and devices. Scientific explanations for the basis of nanoscale derived properties will be illustrated by specific research examples. Topics will include: nanoscale materials, micro/nano fabrication, nano instrumentation, atomic manipulations and nanorobotics. CHY 477 and ECE 457 are identical courses.

**Prerequisites:** CHY 122 or CHY 131 and PHY 122 and MAT 258

**Course Typically Offered:** Spring

Credits: 3

## **ECE 462 - Introduction to Basic Semiconductor Devices and Associated Circuit Models**

Introduces the fundamental device material that is basic to electronics-engineering. Initial concepts include diamond (zinc-blende) crystal structure, holes, free electrons, drift, diffusion, and the energy band model. These are then used to explore p-n junction and MOS structures including the extraction of SPICE model parameters. A more detailed look at reasons behind the characteristics of p-n and Schottky diodes, MOSFETs and BJTs follows. The goal is an understanding of the behavior of the basic semiconductor devices, their limitations and their models. If time permits additional topics from the following list will be discussed: Power Semiconductors, Photonic Devices, Semiconductor Reliability. Lec 3.

**Prerequisites:** CHY 121 or CHY 131 and PHY 122.

**Corequisites:** MAT 258.

**Course Typically Offered:** Variable

Credits: 3

## **ECE 464 - Microelectronics Science and Engineering**

The science and engineering of CMOS and deep sub-micron semiconductor device fabrication. Semiconductor process steps including: diffusion, oxidation, reactive ion etching, chemical etching, surface cleaning, lithography, ion implantation, thin film deposition and chemical-mechanical polishing. A CMOS process flow is outlined. Computer simulation is utilized to provide insight into ion implantation, diffusion and lithography. Lec 3 (Spring.)

**Prerequisites:** PHY122 and CHY 121 or 131;

**Corequisites:** MAT 258

**Course Typically Offered:** Not Regularly Offered

Credits: 3

## **ECE 465 - Introduction to Sensors**

Various types of conductometric, acoustic, magnetic, thermal and optical sensors are presented. Techniques for interfacing the sensors using microprocessor control systems and signal processing are discussed. Applications of sensor systems in medicine, environmental monitoring, the automotive industry, the chemical industry, manufacturing and construction are given. (Spring.)

**Prerequisites:** junior standing in engineering.

**Course Typically Offered:** Spring, Summer

Credits: 3

## **ECE 467 - Solar Cells and Their Applications**

This course is concerned with electricity generation direction from solar energy using photovoltaic solar cells. The solar spectrum is discussed, solar cell types are introduced and efficiency factors are discussed. Techniques for efficiency improvement are reviewed. Photovoltaic electricity generation system design methods are introduced. Economic analysis, such as life cycle costing, and environmental impact of PV systems are discussed.

**Prerequisites:** ECE 209 or ECE 210 or permission.

Credits: 3

## **ECE 471 - Embedded Systems**

Application of micro-processors to the solution of design problems, including hardware characteristics, peripheral control techniques and system development. Lec 3.

**Prerequisites:** ECE 271.

**Course Typically Offered:** Fall

Credits: 3

## **ECE 473 - Computer Architecture and Organization**

Evolution, design implementation, and evaluation of state-of-the-art systems; the organization and structure of computer systems; the architecture of single-processor computer systems; Memory Systems, including interleaving, hierarchies, virtual memory and cache implementations; Communications and I/O, including bus architectures, disk arrays, and DMA. (Fall.)

**Prerequisites:** ECE 275.

**Course Typically Offered:** Fall

Credits: 4

## **ECE 477 - Hardware Applications Using C**

Emphasizes the use of the C programming language to control hardware devices. Review of the necessary features of the C programming language will be included. Students who are not ECE majors interested in taking the course are encouraged to contact the ECE Department to have the prerequisite waived.

**Prerequisites:** ECE 271.

**Course Typically Offered:** Spring

Credits: 3

### **ECE 478 - Industrial Computer Control**

Design of computerized systems for industrial applications. These include programmable logic controllers, personal computers and embedded controllers. Interface electronics, communication strategies, design for hostile environments, fault tolerance and fail safe design will also be covered. Students who are not ECE majors interested in taking the course are encouraged to contact the ECE Department to have the prerequisite waived.

**Prerequisites:** ECE 271.

**Course Typically Offered:** Variable

Credits: 3

### **ECE 484 - Communications Engineering**

This course includes topics in digital communications systems, multiplexing, signal space, modulation, coding, and information theory. Concepts such as data compression, protection, and transmission in wireless and wired networks are studied as well. Real world examples from Wi-Fi, Bluetooth, ZigBee and WiMax standards enriches the practical aspects of the course.

**Prerequisites:** ECE 314 and ECE 316.

**Course Typically Offered:** Fall

Credits: 3

### **ECE 486 - Digital Signal Processing**

A study of discrete-time signals and systems, Z-transforms, discrete Fourier series and transforms. Efficient implementations of discrete-time system and design of IIR, FIR and multirate digital filter structures.

**Prerequisites:** ECE 177 and ECE 314.

**Course Typically Offered:** Spring

Credits: 4

### **ECE 498 - Selected Topics in Electrical and Computer Engineering**



Topics in electrical engineering not regularly covered in other courses. May include advanced microprocessor applications, robot applications, instrumentation semiconductor technology, introduction to VLSI design and microwave acoustics. Content can be varied to suit current needs. May be repeated for credit, with departmental permission.

**Prerequisites:** permission.

**Course Typically Offered:** Fall & Spring

Credits: 1-3

## **ECO 100 - Intro to Economics**

An introduction to the principles of economic decision making. Topics include: resource allocation; government policies; markets and pricing; and international aspects of the economy. This course does not substitute for either ECO 120 or ECO 121. Due to substantial overlap in content, students are not permitted to receive credit for ECO 100 and INT 110.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions Requirement.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

## **ECO 117 - Issues and Opportunities in Economics**

Consists of weekly meetings of first year students. Topics covered include overview of the fields of Economics, school and university program requirements, and current economic issues. Pass/Fail grade only.

**Course Typically Offered:** Fall

Credits: 1

## **ECO 120 - Principles of Microeconomics**

Principles of microeconomics and their application to economic issues and problems. Analysis of the economic decision-making of individuals and firms; markets and pricing; monopoly power; income distribution; the role of government intervention in markets.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions Requirement.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

## **ECO 121 - Principles of Macroeconomics**

Principles of macroeconomics and their application to modern economic issues and problems. Analysis of national income and employment; fluctuations in national income; monetary and fiscal policy; control of inflation, unemployment, and growth; and international aspects of macroeconomic performance.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions Requirement.

**Prerequisites:** C- or better in MAT 111. ECO 120 recommended.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

## **ECO 180 - Citizens, Energy & Sustainability**

This course is intended to provide students with a broad understanding of energy issues by focusing upon current energy use and mandates, energy production (with a focus on alternative energy options, as well as introduces the political, human and environmental implications of energy use and production. We will discuss how citizens play a vital role in determining the direction that energy policy will take. In the course of our lifetime each of us will be asked to vote on an energy related circumstance, this course intends to give you a place to start in understanding the complexities of energy.

**General Education Requirements:** Satisfies the General Education Population and the Environment and Social Contexts and Institutions Requirements.

**Course Typically Offered:** Spring, Summer

Credits: 3

## **ECO 190 - World Food Supply, Population and the Environment**

Reviews current global resources focusing primarily upon food production and population, and environmental problems relating to food production and distribution. World trade and world trade policy are considered with primary emphasis on food. Other topics include world trade liberalization, genetically modified foods and comparative agricultural systems.

**General Education Requirements:** Satisfies the General Education Population and the Environment and Social Contexts and Institutions Requirements.

**Course Typically Offered:** Variable

Credits: 3

## **ECO 254 - Small Business Economics and Management**

Application of economic concepts to real world business and economic decisions using graphs, spreadsheets and analytical techniques. Students will learn introductory small business management concepts, how to estimate the cost of producing goods and services, and how to develop business feasibility studies. Students develop a hands-on project that looks at the production and marketing of a good or service.

**Course Typically Offered:** Spring

Credits: 3

## **ECO 280 - Fundamentals of Mathematical Economics**

Fundamental mathematical economics applies the tools of algebra and basic calculus to economics and business based problems. Instruction includes principles of calculus, differentiation, optimization, and integration. The focal applications include: economic modeling, supply and demand modeling, utility maximization, cost minimization, social welfare measurement and other topics.

**Prerequisites:** C- or better in ECO 120, ECO 121, and either MAT 111 or MAT 115 - or permission.

**Course Typically Offered:** Spring

Credits: 3

## **ECO 285 - Economics of Sports**

Economic and business related issues facing sports franchises and leagues are examined using concepts from industrial organization, labor economics and public finance.

**Prerequisites:** C- or better in ECO 120

**Course Typically Offered:** Variable

Credits: 3

## **ECO 321 - Intermediate Macroeconomics**

Analysis of the basic forces that cause fluctuations in economic activity and their effects on employment, investment, and business firms. Stabilization proposals examined and evaluated.

**Prerequisites:** Grade of C- or better in ECO 120 and ECO 121, or permission.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **ECO 333 - Labor Markets and Human Resource Development**

Topics include: labor market dynamics, the structure of labor markets, preparation for employment, labor market problems of special groups, remedial manpower programs, labor markets and public policy.

**General Education Requirements:** Satisfies the General Education Ethics Requirement

**Prerequisites:** ECO 120 and ECO 121

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **ECO 335 - History of Economic Thought**

Survey of basic economic principles and theories from preindustrial times to present. Emphasis on the Classical School (Smith, Ricardo, and Malthus) and its critics, the development of the Austrian School, the synthesis of Neo-Classicism and emergence of macroeconomics.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition Requirement.

**Prerequisites:** ECO 120 and ECO 121 or equivalent with permission.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **ECO 339 - International Finance**

Analysis of the fundamental characteristics of an open macroeconomy including exchange rate determination, balance of payments adjustment, income determination, financial flows, effect of monetary and fiscal policies on exchange rates, economic integration and global monetary issues.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** ECO 120 and ECO 121.

**Course Typically Offered:** Fall

Credits: 3

### **ECO 340 - The Canadian Economy: Issues and Policies**

Survey of the structure and functioning of the Canadian economic system, its problems and the policies used to solve them.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** ECO 120 and ECO 121 or equivalent with permission.

**Course Typically Offered:** Variable

Credits: 3

### **ECO 342 - Health Economics**

Use of basic microeconomic principles to examine health policy issues. Economic principles are used to understand the demand for health care, the supply of health care, the health insurance market, and the role of the government in health policy.

**Prerequisites:** C- or better in ECO 120 and Eco 121.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **ECO 343 - North American Economic Integration**

Covers the emergence of trading blocs in North America and the conflict involved in the passage of North America Free Trade Agreement (NAFTA). Also covers the economic costs and benefits for Canada, the United States and Mexico (including the relocation of production and job loss). The future of North American economic integration will be addressed.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition Requirement.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **ECO 350 - Intermediate Microeconomic Theory**

A study of how individual choice allocates goods and resources in market economies.

**Prerequisites:** C- or better in ECO 120 or Permission.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **ECO 353 - Money and Banking**

Examines the American banking and financial system including monetary theory and policy.

**Prerequisites:** ECO 120 and ECO 121 or equivalent with permission.

**Course Typically Offered:** Spring

Credits: 3

### **ECO 366 - Applied Economic Data Analysis**

Covers a variety of empirical methods that are often used to examine economic data. Emphasis is on using the appropriate data analysis tool to solve a problem or answer an economics-related question. Focuses on statistical inference, as well as descriptive and regression-based analysis. Includes several computer-based assignments.

**Prerequisites:** MAT 215 or MAT 232 or permission.

**Course Typically Offered:** Fall

Credits: 3

### **ECO 370 - Topics in Economics**

Includes readings, research and discussions. Topics vary depending on faculty and student interests.

**Prerequisites:** ECO 120 and ECO 121 or permission.

**Course Typically Offered:** Fall & Spring

Credits: 1-3

### **ECO 377 - Introduction to Natural Resource Economics and Policy**

Economic aspects of natural resource management and policy are presented. Both consumptive and nonconsumptive uses of natural resources are discussed along with the socially optimal use of renewable and nonrenewable resources. Contemporary environmental problems and policies are presented.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and Population and the Environment Requirements.

**Prerequisites:** C- in either ECO 120 or ECO 100, or permission.

**Course Typically Offered:** Fall

Credits: 3

### **ECO 381 - Sustainable Development Principles and Policy**

The principles of sustainable development are investigated and considered against a number of ethical and philosophical concepts. Possible ecological, economic and social criteria for evaluating development proposals against those principles are surveyed. Selected issues relevant to Maine are evaluated by sustainable development criteria.

**General Education Requirements:** Satisfies the General Education Population and the Environment and Ethics Requirements.

**Prerequisites:** Sophomore standing.

**Course Typically Offered:** Fall

Credits: 3

### **ECO 395 - Field Experience**

An approved program of work experience which contributes to the academic major and for which academic credit is given. Students may work part time or full time for a semester in a job related to their professional career goals.  
(Pass/Fail Grade Only.)

**Prerequisites:** Junior standing and permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1 - 16

### **ECO 405 - Sustainable Energy Economics & Policy**

This course presents the economics of energy supply and use and the consequences for environmental quality, energy security, and sustainable economic growth and development. A variety of energy types are examined including fossil fuels, nuclear

power, and a range of renewable energy technologies including biomass, hydro, solar, and wind power. The effects of energy on greenhouse gas (GHG) emissions and climate change, on air and water quality, and on human health are considered along with policies to mitigate these effects such as carbon prices, emissions targets, efficiency requirements and investments, and renewable portfolio standards. The effects of import dependence and indigenous resource development on energy security and regional economic growth and development are assessed. Alternative future energy paths are developed that are consistent with environmental stewardship, energy security, and sustainable economic growth and development.

This course satisfies the General Education requirements for Population and Environment.

**Prerequisites:** ECO 120 and ECO 121, or ECO 410.

**Course Typically Offered:** Spring

Credits: 3

### **ECO 410 - Accelerated Introductory Economics**

An accelerated presentation of the fundamental elements of micro- and macroeconomic theory. Microeconomic topics include consumer and firm behavior, structure and functioning of purely competitive markets, and alternative market structures. Macroeconomic topics include financial system structure, measurement of aggregate economic activity and determinants of economic growth, economic fluctuations, and stabilization policies.

**Prerequisites:** Baccalaureate degree or Junior/Senior standing and minimum GPA of 3.25, or permission

**Course Typically Offered:** Fall

Credits: 3

### **ECO 420 - Intermediate Microeconomic Theory with Calculus**

Advanced study of consumer behavior, markets, and distribution of goods and resources. This course may be substituted for ECO 350, Intermediate Microeconomic Theory.

**Prerequisites:** C- or better in ECO 120 and either ECO 280 or MAT 126, or permission.

**Course Typically Offered:** Fall

Credits: 3

### **ECO 422 - Rural Economic Development**

The principles of economic and social development as applied to communities are examined with emphasis on the roles, goals and tools of community development practitioners and the economics of the community.



**Prerequisites:** C- in either ECO 120 or ECO 100, or permission.

**Course Typically Offered:** Variable

Credits: 3

### **ECO 443 - Introduction to Modern Economic Growth**

An introduction to the empirical aspects of economic growth and an exploration of the major determinants of growth and decline, including the roles of technological progress and research and development, human capital accumulation, technology transfer, intellectual property rights and other socio-political institutions.

**General Education Requirements:** Satisfies the Social Context and Institutions General Education Requirement.

**Prerequisites:** C- or better in either ECO 350 or ECO 420

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **ECO 445 - Urban-Regional Economics**

Economics of business and household location decisions and the formation and spatial distribution of urban places. Economics of land rent, intraurban land use allocation, and the suburbanization of households and businesses. Economics of urban and regional growth and decline and the effects of public policies involving taxation, industry subsidies, public service and infrastructure supply and environmental regulations and quality.

**Prerequisites:** C- or better in either ECO 350 or ECO 420

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **ECO 450 - International Environmental Economics and Policy**

International environmental economics and policy uses an economic framework to examine the reasons behind, and methods to solve, conflicts between economic development and growth, trade, and the environment. It then explores the processes of international policy development: identifying problems, designing and negotiating solutions, and implementing policies to change national behavior.

**Prerequisites:** MAT 115, and C- or better in either ECO 350 or ECO 420, or equivalent with permission.

**Course Typically Offered:** Fall, Odd Years

Credits: 3

### **ECO 466 - Internet Marketing for Small Business**

An introduction to Internet marketing principles and practices for small businesses. Focuses on the functioning of the Internet as a marketing medium, developing Web sites that contribute to a business's goals, and effective strategies for integrating the Internet into a firm's marketing plan. Web-based Lec 0 or classroom-based Lec 3.

**Course Typically Offered:** Spring

Credits: 3

### **ECO 470 - Topics in Economics**

Includes readings, research, and discussions. Topics vary depending on faculty and student interests.

**General Education Requirements:** Satisfies the General Education Writing Intensive and Capstone Experience Requirements.

**Prerequisites:** ECO 321 and C- or better in either ECO 350 or ECO 420, or permission.

**Course Typically Offered:** Variable

Credits: 1-3

### **ECO 471 - Public Finance and Fiscal Policy**

Covers public expenditure theory, principles of taxation, the federal budget and alternative budget policies, federal tax policy, fiscal policy for stabilization, federal debt.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions Requirement.

**Prerequisites:** ECO 350 or ECO 420.

**Course Typically Offered:** Fall

Credits: 3

### **ECO 473 - Economic and Policy Applications of GIS**

Provides an introduction to the principles of geographic information systems (GIS). Covers methods for managing, visualizing, and analyzing spatial data. Emphasis is given to how social scientists employ GIS to study the interactions between humans and the natural environment. Recitations will include hands-on experience working with relevant spatial data and spatial analysis software.

**Prerequisites:** COS 102, COS 103 and COS 104 or equivalent; MAT 215 or MAT 232 or equivalent.

**Course Typically Offered:** Spring

Credits: 3

### **ECO 475 - Industrial Organization**

Explores the relationship between market structure, conduct and performance. Development of a general analytical framework to assess performance in existing markets and evaluation of current public policy on this basis.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions, Writing Intensive and Capstone Experience Requirements.

**Prerequisites:** C- or better in either ECO 350 or ECO 420.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **ECO 477 - Economics of Environmental and Resource Management**

A study of the major problems in environmental and resource economics. Examines sources of market failure and centralized and decentralized regulatory responses, techniques for valuing non-market goods and optimal management of renewable and nonrenewable natural resources. Rec 3.

**General Education Requirements:** Satisfies the General Education Population and the Environment Requirement.

**Prerequisites:** C- or better in either ECO 350 or ECO 420, or permission of instructor.

**Course Typically Offered:** Variable

Credits: 3

### **ECO 479 - Land Use Planning**

Principles of planning for coordinated use and development of the land resource base. Survey of emerging concepts and problems that relate to land use policies and control measures. Emphasis on economics, legal, institutional, and social issues.

**Course Typically Offered:** Variable

Credits: 3

### **ECO 480 - Introduction to Mathematical Economics**

Mathematics used as a language in presenting concepts of economic theory.

**Prerequisites:** C- or better in ECO 321, and C- or better in either ECO 350 or ECO 420, and C- or better in MAT 126 or ECO 280.

**Course Typically Offered:** Variable

Credits: 3

### **ECO 485 - Introduction to Economic Statistics and Econometrics**

Surveys the application of probability and statistics to economic problems. Emphasis on construction and testing of economic hypotheses. Practical application of regression techniques, including use of computer, occupies second half of course. Strong algebra skills required.

**General Education Requirements:** Satisfies the General Education Quantitative Literacy Requirement.

**Prerequisites:** MAT 215 or MAT 232, and C- or better in either ECO 350 or ECO 321 or ECO 420.

**Course Typically Offered:** Fall

Credits: 3 - 4

### **ECO 488 - Spreadsheet Modeling and Decision Analysis**

An examination of quantitative techniques for optimization and forecasting typically used by businesses. Emphasis is placed on modeling linear programming problems in Excel, determining optimal solutions, and interpreting parameter sensitivity. The course also covers forecasting, queueing models, and simulation modeling.

**Prerequisites:** ECO 120

**Course Typically Offered:** Spring

Credits: 3

## **ECO 489 - Senior Seminar**

A writing intensive and discussion based course focusing on current economic problems. Students are required to prepare a major research paper and presentation in conjunction with the instructor. Rec 3.

**General Education Requirements:** Satisfies the General Education Writing Intensive and Capstone Experience Requirements.

**Prerequisites:** Major in Economics (BA or BS), or Financial Economics; and Senior Standing and a grade of C- or better in ECO 321 and ECO 350 (or ECO 420), or permission of the instructor.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **ECO 496 - Field Experience in Economics**

Supervised employment in either the public or private sector. Requirements include initial proposal showing relevance of job and final report or paper.

**Prerequisites:** 400-level economics course in relevant area of work.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **ECO 497 - Independent Studies**

Analysis of current problems in resource economics and policy, and community development. May be repeated for additional credit.

**Prerequisites:** permission of instructor.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1-3

## **ECO 499 - Readings in Economics**

Supervised readings or research in topics not covered by regular course offerings. Offered at student request. (May be repeated for credit.)

**Prerequisites:** ECO 321, Junior or Senior Standing, and C- or better in either ECO 350 or ECO 420, and permission.

**Course Typically Offered:** Variable

Credits: 3

### **ECP 101 - Technical Writing for Mechanical Engineers I**

The course offers introductory guided practice in applying technical writing strategies such as document organization and design, graphics design, stylistic choices, formatting practices, and editing skills.

**General Education Requirements:** Satisfies the General Education Writing Intensive requirement.

**Corequisites:** MEE 101 or special permission

**Course Typically Offered:** Fall

Credits: 1

### **ECP 214 - Technical Writing Workshop for Electrical Networks I**

Consists of supervised workshops and exercises designed to assist students in preparing the technical documents required in ECE 214, Electrical Networks Laboratory. Students will review and revise their work, as well as complete exercises that will emphasize the technical writing skills they will need in the classroom and on the job.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement when taken with ECE 214.

**Corequisites:** ECE 214

**Course Typically Offered:** Spring

Credits: 1

### **ECP 225 - Civil Engineering Technical Writing I**

Technical writing course for Civil Engineers with focus on employment documents, informal proposal, individual research paper, oral presentations of research paper and group project report. Reports are also submitted to CIE 225. Lec 1. (Spring)

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement when taken with CIE 225.

**Prerequisites:** Civil Engineering major or permission.

**Corequisites:** CIE 225

**Course Typically Offered:** Spring

Credits: 1

### **ECP 341 - Technical Writing for Mechanical Engineers I**

This course offers guided practice and instruction in writing informal and formal lab reports for MEE 341. The course focuses on applying technical writing strategies such as audience analyses, document organization and design, graphics design, stylistic choices, formatting practices, and self-editing skills.

**General Education Requirements:** Satisfies the General Education Writing Intensive requirement.

**Corequisites:** MEE 341 or special permission.

**Course Typically Offered:** Spring

Credits: 1

### **ECP 342 - Technical Writing Workshop for Electrical Networks II**

Consists of supervised workshops and exercises designed to assist students in preparing the technical documents required in ECE 342, Electronics I. Students will review and revise their work, as well as complete exercises that will emphasize the technical writing skills they will need in the classroom and on the job.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement when taken with ECE 342.

**Corequisites:** ECE 342

**Course Typically Offered:** Fall

Credits: 1

### **ECP 403 - Technical Writing Workshop for Electrical and Computer Engineering Design Project**

Consists of supervised workshops and exercises designed to assist students in preparing the technical documents required in ECE 403, Electrical and Computer Engineering Design Project. Students will review and revise their work, as well as complete exercises that will emphasize the technical writing skills they will need in the classroom and on the job.

**Corequisites:** ECE 403

**Course Typically Offered:** Fall & Spring

Credits: 1

## **ECP 411 - Civil Engineering Technical Writing III**

Technical writing laboratory for civil engineering seniors that culminates in the capstone report. The topics covered include correspondence, report writing, document design and management, and professional writing style. Most assignments are prepared and submitted by project teams, which meet frequently with the instructor. Reports are also submitted to CIE 411.

**General Education Requirements:** Together with ECP 225 and ECP 413, this course satisfies the General Education Writing Intensive requirement.

**Corequisites:** CIE 411

**Course Typically Offered:** Spring

Credits: 1

## **ECP 413 - Civil Engineering Technical Writing II**

Technical writing course for civil engineers with focus on preparing persuasive professional documents and a significant proposal. Reports are also submitted to CIE 413. Lec 1. (Spring).

**General Education Requirements:** Satisfies the General Education Writing Intensive when taken with CIE 413.

**Prerequisites:** Civil Engineering major or permission.

**Corequisites:** CIE 413

**Course Typically Offered:** Fall

Credits: 1

## **ECP 487 - Technical Writing for Mechanical Engineers II**

This course offers instruction in writing documents related to mechanical engineering senior design projects. Instruction focuses on ethics in professional engineering, writing new project proposals, creating and maintaining a useful project website; and planning, organizing and writing of a design progress report.

**General Education Requirements:** Satisfies the Writing Intensive General Education Requirement.

**Prerequisites:** ECP 341

**Corequisites:** MEE 487 unless otherwise approved by the instructor and the Department of Mechanical Engineering

**Course Typically Offered:** Fall

Credits: 1



### **ECP 488 - Technical Writing for Mechanical Engineers III**

This course offers guided practice and instruction in group writing strategies, performing oral presentations, creating technical posters, writing professional job applications materials, and writing formal design completion records for the MEE 488 capstone project. The course emphasizes small group communication and coordination and technical writing strategies, such as reader-centered document organization and formatting, page and graphics design, and stylistic choices.

**General Education Requirements:** Satisfies the General Education Writing Intensive requirement.

**Corequisites:** MEE 488 or special permission.

**Course Typically Offered:** Not Regularly Offered

Credits: 1

### **EDT 400 - Integrating Technology for Teaching and Learning**

Pre-service teachers learn technology tools to support teaching and learning in classrooms. Content includes application of technology (ISTE) standards required for teacher certification to instruction and assessment. Required for Elementary Education, Child Development and Family Relations Early Childhood Education option majors, Exercise Science majors, Athletic Training and Secondary English majors.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **EES 100 - Human Population and the Global Environment**

Introduces the concepts and principles necessary to evaluate contemporary global issues of population growth, natural resource conservation and environmental protection. Surveys the historical development of environmental awareness in the United States. Develops skills to interpret critically the diverse types of information available about environmental issues.

**General Education Requirements:** Satisfies the General Education Population and the Environment Requirement.

**Course Typically Offered:** Spring

Credits: 3

### **EES 117 - Introduction to Ecology and Environmental Sciences**

This course offers an introduction to college and provides an interdisciplinary perspective on ecological and environmental issues. The course will examine ecological systems, the interrelationships between human activities and the environment, and the social, political, economic, and technological factors that affect the use of natural resources. Material is presented via lectures, field trips during class hours and special readings.

**Course Typically Offered:** Fall

Credits: 2

## **EES 140 - Soil Science**

Considers the chemical, physical and biological properties of soil, as well as the origin, management and interrelationships of soils to plant growth. Rec 3.

**General Education Requirements:** Together with EES 141, this course Satisfies the General Education Lab in the Basic or Applied Sciences Requirement. Satisfies the General Education Application of Scientific Knowledge when taken without EES 141.

**Prerequisites:** BMB 207 or CHY 121 is recommended.

**Course Typically Offered:** Spring

Credits: 3

## **EES 141 - Soil Science Laboratory**

A series of practical laboratory exercises providing hands-on experience with soil measurements and information use. Course will include field trips during class hours.

**General Education Requirements:** Together with EES 140, this course Satisfies the General Education Lab in the Basic or Applied Sciences Requirement.

**Prerequisites:** BMB 207 or CHY 121 is recommended.

**Corequisites:** EES 140

**Course Typically Offered:** Spring

Credits: 1

## **EES 200 - Introduction to Safety and Environmental Management**

Provides an introduction to the requirements to obtain a Department of Labor 29 CFR 1910 - 10 Hour General Industry

Certification. Focuses on regulations and applying practical skills required to provide leadership for safety and environmental activities in industry. Students will gain exposure to an appreciation for safety and environmental strategies successful employees/employers utilize in a variety of career fields.

**Course Typically Offered:** Spring

Credits: 3

### **EES 217 - The Acadia Lessons Project: Field Problems in EES**

This course is an intensive field experience for EES majors. EES undergraduates will stay at the Schoodic Education and Research Center at Acadia National Park for an intensive 2.5-day weekend program that will immerse them in Acadia's rich science and cultural research history, then challenge students to assess and highlight future challenges and approaches to the next century of National Park science and management. Students will be introduced to a relevant problem or issue facing stakeholders in the field of ecology and environmental sciences, and will work in teams to research, synthesize, and present what they've learned. The location provides a setting rich with opportunities for outdoor experience, interactions with scientists in residence, and varied local, regional, and national stakeholders with whom we will collaborate on the Lessons Project. Students will travel to the Schoodic campus by bus, leaving UMaine Friday afternoon and returning to campus Sunday evening. This course is a required weekend field experience for EES majors.

**Prerequisites:** Prerequisite: Sophomore or Junior Standing

**Course Typically Offered:** Fall

Credits: 0-1

### **EES 324 - Environmental Protection Law and Policy**

A survey of the law and policy of environmental protection in the United States with emphasis on Federal statutes and common law approaches to environmental protection. Material covered will include the basic statutes, the administrative law, the case law of air quality, water quality, hazardous substances and the National Environmental Policy Act. Students will develop an understanding of how the legal process works in the context of specific environmental case studies and will be encouraged through class dialogues and exercises to develop their analytic skills.

**General Education Requirements:** Satisfies the General Education Population and the Environment Requirement.

**Prerequisites:** Sophomore standing.

**Course Typically Offered:** Fall

Credits: 3

### **EES 396 - Field Experience in Ecology and Environmental Sciences**

Approved work experience for which academic credits is given. Students may work part time or full time for a semester in an approved program of work experience which contributes to the academic major. Students have the opportunity to gain practical experience in a job related to their professional career goals.

(Pass/Fail Grade Only.)

**Prerequisites:** Junior standing and permission.

**Course Typically Offered:** Summer

Credits: 1 - 16

### **EES 397 - Topics in Ecology and Environmental Sciences Conservation and Management**

The conservation and management of natural resources entail dynamic social, economic, and scientific problems. Students investigate a natural resource topic of current national or international concern. Topics vary; course may be repeated for credit.

**Prerequisites:** Ecology and Environmental Sciences major or permission of instructor.

**Course Typically Offered:** Fall, Even Years

Credits: 1-3

### **EES 400 - Senior Paper in Ecology and Environmental Sciences**

Students select a problem in natural resource utilization, management, or policy, and prepare a detailed research paper on the topic. Each student will work closely with one of the program faculty in Ecology and Environmental Sciences.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement and together with EES 489 satisfies the Capstone Experience Requirement.

**Prerequisites:** Ecology and Environmental Sciences major with senior standing.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **EES 450 - Principles of Environmental Science**

The principles of environmental science grounded in the flows of chemicals and energy through natural systems on one hand and our industrial society on the other. The course will deal with energy production and its associated pollution and the consequences of that pollution, with an emphasis on climate change issues (global warming), acid deposition, atmospheric particulates and photochemical smog. The student will gain a basic understanding of the scientific principles governing environmental processes

and how human activities, particularly pollution, interact with and affect these processes. Essential for anyone wishing to pursue a meaningful career in environmental science. Lec 3.

**Prerequisites:** MAT 111 or MAT 122 or MAT 126 and CHY 121 & CHY 123, or permission.

**Course Typically Offered:** Spring

Credits: 3

### **EES 475 - Field Studies in Ecology**

An intensive ecology travel study course of one to several weeks to an area of ecological interest (e.g., the Amazon basin or Serengeti plains) scheduled during winter or spring break, May term, or summer. Field and living conditions may be rigorous and/or primitive. The course MAY meet weekly prior to and following the travel component. Prerequisite: General ecology course.

**Prerequisites:** A General Ecology Course

**Course Typically Offered:** Spring

Credits: 1-3

### **EES 489 - Critical Issues in Ecology and Environmental Sciences Policy**

Current and historically important issues in natural resource management and conservation are evaluated by teams of students and faculty. Interdisciplinary approaches to problem analysis are stressed, with special attention to the ways scientific information and management options affect policy.

**General Education Requirements:** Together with EES 400 Satisfies the General Education Capstone Experience Requirement.

**Prerequisites:** Ecology and Environmental Sciences major with senior standing.

**Course Typically Offered:** Fall

Credits: 4

### **EES 490 - Senior Seminar**

Exposes students to emerging issues in Ecology and Environmental Sciences through weekly attendance of existing seminars across a variety of academic units at UMaine. Focuses on the meaning of interdisciplinary work and how discipline-diverse approaches aid in solving complex environmental problems. Develops skills in evaluating professional presentations and

provides experiences with a variety of academic cultures and professionals.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** Senior Standing in Ecology and Environmental Sciences.

Credits: 3

## **EES 497 - Independent Studies in Ecology and Environmental Sciences**

Analysis and investigation of current problems in ecology and environmental sciences in consultation with a faculty member in the program. May be repeated for additional credit.

**Prerequisites:** Ecology and Environmental Sciences major.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1-3

## **EET 100 - Introduction to Electrical Engineering Technology**

Develops a thorough insight into the engineering profession and covers important topics such as success in the classroom, problem-solving and teamwork skills, computer tools for engineers, technical communication and ethics. Also of particular importance will be an engineering design project. The development of project documentation and technical writing skills will be emphasized. Lec 3. (Fall.)

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** Electrical Engineering Technology majors only or permission.

**Corequisites:** ENG 101 or Permission

**Course Typically Offered:** Fall

Credits: 3

## **EET 111 - Circuit Analysis I**

Introduction to circuit analysis techniques as applied to AC and DC electrical circuits. Topics include the basic laws and theorems used in electrical circuit analysis including Kirchoff's Voltage and Current Laws, Ohms law, capacitor and inductor characteristics, AC phasor representation. Includes basic computer skills and circuit simulation. Lec 3, Lab 3.

**Corequisites:** MAT 122.

**Course Typically Offered:** Fall

Credits: 4

## **EET 112 - Circuit Analysis II**

Introduction to AC circuits, including the study of reactive components, analysis techniques such as superposition and nodal/mesh analysis, passive filter circuits and the application of phasor analysis to steady state single-phase AC circuits. Lec 3, Lab 3.

**Prerequisites:** EET 111, and either TME 151 or MAT 122.

**Course Typically Offered:** Spring

Credits: 4

## **EET 174 - Introduction to Microcomputers**

The basic architecture of the microcontroller with particular emphasis on the control and I/O sections. Structured assembly language programming of the microcontroller. Series and parallel data transfer. Analog-to-digital conversion principles. A design project will give students hands-on experience in hardware and software design and testing using microcontrollers. Lec 3, Lab 3. (Spring.)

**Prerequisites:** EET 111

**Course Typically Offered:** Spring

Credits: 4

## **EET 241 - Analog Circuit Fundamentals**

Topics include: semiconductor diodes, bipolar transistors, FETs, operational amplifier fundamentals, d-c and a-c analysis and design of single-transistor and FET amplifiers, hybrid pi circuits. Software simulation of circuits is integral to the course. A design project is required. Lec 3, Lab 3. (Spring.)

**Prerequisites:** EET 112.

**Course Typically Offered:** Fall

Credits: 4

## **EET 242 - Advanced Analog Circuit Design**

Topics include: differential amplifiers, dc and ac analysis of multi-transistor circuits, multi-transistor amplifier frequency analysis, power amplifiers and operational amplifiers. Software simulation of circuits is integral to the course. A design project is required. Lec 3, Lab 3. (Spring.)

**Prerequisites:** EET 241.

**Course Typically Offered:** Spring

Credits: 4

## **EET 275 - Digital Communications**

This course will focus on configuring and utilizing various communications technologies. Serial communication, Analog-to-Digital Conversion, basic sequential systems and networking, and establishing PLC communication networks will be among the topics discussed. Combined Lec 3, Lab 2.

**Course Typically Offered:** Fall

Credits: 4

## **EET 276 - Programmable Logic Controllers**

A continuation of EET 275. Emphasis on industrial control using programmable logic controllers. Major topics include: PLC memory mapping, I/O configurations, and various data communications protocols. A design project is required.

**Prerequisites:** EET 275 or by permission of instructor.

**Course Typically Offered:** Spring

Credits: 4

## **EET 321 - Electro-Mechanical Energy Conversion**

Covers three-phase power, power system supply and distribution, magnetic circuits and transformers, industrial control and communication protocols and programmable controllers. Lec 3, Lab 3 (Spring.)

**Prerequisites:** EET112

**Corequisites:** TME 354 or MAT 258

**Course Typically Offered:** Spring



Credits: 4

### **EET 323 - Power Systems Analysis**

Covers AC and DC machinery principles and applications. It introduces basic power electronic principles and provides experience applying and control electronic drives. Computer control of motors and industrial communication protocols are also covered. Lec 3, Lab 3. (Spring.)

**Prerequisites:** EET 321 and EET 325.

**Course Typically Offered:** Fall

Credits: 4

### **EET 324 - Network Analysis and Applications**

Topics include: classical analysis of electrical circuits utilizing Kirshoff's laws, differential equations and Laplace transforms. Modeling of dynamic systems; transfer functions; block diagrams. Transient analysis of first and second order systems. Modeling of system behavior using simulation software.

**Corequisites:** EET 242 and TME 354 or MAT 258

**Course Typically Offered:** Fall

Credits: 4

### **EET 325 - Design and Applications of Control Systems**

Classical design, simulation and analysis of closed-loop control systems, emphasizing industrial control applications and real-world examples and practices. Emphasis on time-domain and frequency-response methods. Lec 3, Lab 3

**Prerequisites:** EET 324.

**Course Typically Offered:** Spring

Credits: 4

### **EET 330 - Electrical Applications**

Introduces the basics of AC and DC circuits along with analog and digital circuit principles, amplifiers and transducers. The laboratory will provide students with hands-on experience with the principles and instrumentation commonly used in industry. (Fall.)

**Prerequisites:** PHY 108 and TME 152 and Mechanical Engineering Technology major or permission

**Course Typically Offered:** Not Regularly Offered

Credits: 4

### **EET 350 - Senior Design Project I**

The first of a three-course sequence intended to provide EET seniors with a capstone learning experience. Requirements include selection of a design project, submission of a proposal and written and oral presentations of project status. Lec 1. (Pass/Fail Grade Only) (Spring.)

**General Education Requirements:** Together with EET 451 and EET 452, this course Satisfies the General Education Capstone Experience Requirement.

**Prerequisites:** EET 241.

**Corequisites:** EET 242

**Course Typically Offered:** Spring

Credits: 1

### **EET 386 - Project Management**

Covers the basics with particular emphasis on Technical Project Management. Includes designing a project plan, selecting and allocating resources, team-building skills, project plan implementation, and other topics relevant to Project Management. Focuses on developing the skills needed to effectively manage a variety of technical projects, and to prepare students for certification as Project Management Professionals (PMP). Lec 3.

**Prerequisites:** sophomore standing. Engineering or Engineering Technology majors.

**Course Typically Offered:** Fall & Summer

Credits: 3

### **EET 394 - Electrical Engineering Technology Practice**

Cooperative work experience at full-time employment for at least a ten-week period. May be repeated for credit. (Fall, Spring and Summer.)

(Pass/Fail Grade Only.)

**Prerequisites:** Junior standing and permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1-3

## **EET 414 - Introduction to Printed Circuit Boards**

This course will focus on PCB technology, layout, and construction. Emphasis will be placed on multi-layered PCB technology, schematic capture and circuit board layout using Altium Designer, and actual PCB design and construction using a two-layer milling machine. Advanced PCB technology and manufacturing techniques will also be discussed. Students will be required to use Altium Designer to design and layout their own custom circuit and, at the end of the semester, construct and test their PCB using the University's milling machine.

**Prerequisites:** EET 242 or instructor permission

**Course Typically Offered:** Fall

Credits: 3

## **EET 451 - Senior Design Project II**

The second of a three-course sequence intended to provide EET seniors with a capstone learning experience. Requirements include development and completion of a design project and hardware demonstration.

**General Education Requirements:** Together with EET 350 and EET 452, this course Satisfies the General Education Capstone Experience Requirement.

**Prerequisites:** EET 350.

**Course Typically Offered:** Fall

Credits: 1

## **EET 452 - Senior Design Project III**

The third of a three-course sequence intended to provide EET seniors with a capstone learning experience. Requirements include development and completion of a design project, hardware demonstration, and written and oral presentations of project status.

Lec 1. (Spring.)

**General Education Requirements:** Together with EET 350 and EET 451, this course Satisfies the General Education Capstone Experience Requirement. Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** EET 451 or permission.

**Course Typically Offered:** Spring

Credits: 2

## **EET 460 - Renewable Energy and Electricity Production**

An overview of renewable energy resources, energy conversion and storage for stationary and transportation applications. Topics include: Basics of electrical energy and power generation, load specification, history of electric utilities, distributed generation, the economics of energy, biomass fuels, wind and solar power.

**Prerequisites:** PHY 108 or PHY 112 or PHY 122, and MAT 126 or TME 253, and CHY 121 or CHY 131

Credits: 3

## **EET 498 - Selected Topics in Electrical Engineering Technology**

Topics in engineering technology not regularly covered in other courses. Content varies to suit the needs of individuals. May be repeated for credit. (Fall and Spring.)

**Prerequisites:** permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1-4

## **EHD 100 - New Student Seminar in Education and Human Development**

An introduction to university life and the requirements of programs in the College of Education and Human Development. Designed to help incoming students develop skills which enable them to be successful in college. Introduces academic, social resources, campus services and assist in career exploration. An important goal is to connect students with faculty, other students and the university community.  
(Pass/Fail Grade Only.)

**Course Typically Offered:** Fall

Credits: 1

## **EHD 101 - The Art and Science of Teaching**

Aligned to the revised Conceptual Framework and the InTASC and ISTE Standards for Teachers, the Art and Science of Teaching integrates content knowledge, pedagogical knowledge, and early field experience. Weekly meetings highlight topics and issues central to 21st century education while overarching themes weave throughout the course: reflective practice, diversity and inclusion, technology integration, differentiated instruction and evidence-based practice. Substantial, periodic field experience supports student understanding of these topics and strands. In this writing intensive course, students reflect on their experience and advocate for professional goals through written, oral, and technology-based composition.

**General Education Requirements:** Satisfies the General Education Writing Intensive requirement

**Prerequisites:** EHD 100, ENG 101 or equivalent; EDE, EDS or CHF major (ECE) or Education minor

**Course Typically Offered:** Fall and Spring

Credits: 3

## **EHD 202 - Education in a Multicultural Society**

An interdisciplinary and multicultural examination of the school-society relationship in the United States. Participants examine their own and others' assumptions about multiculturalism, globalization, and the political, economic, ecological, social, ethical and academic purposes that shape teaching and learning in the twenty-first century.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives and Institutions and the Writing Intensive Requirements.

**Prerequisites:** ENG 101 or equivalent. Restricted to Elementary, Secondary, Kinesiology and Physical Education, Child Development and Family Relations for Early Childhood option, Art and Music Education majors only or Education minors only.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **EHD 203 - Educational Psychology**

A scientific study of human development, learning, cognition and teaching. Emphasis on theory and research and their application to educational problems.

**Prerequisites:** PSY 100.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

## **EHD 204 - Teaching and Assessing for Student Learning**

Examines instructional planning, grouping of students, classroom space, and appropriate teaching materials, the theory and ethical practice of educational assessment includes descriptive statistics, design, administration, scoring, and evaluation of assessments. Emphasis will be given to teacher-made formative and summative assessments including standardized assessments and how to incorporate data into backwards planning for unit and lesson design.

**Prerequisites:** EHD 100 and EHD 101, Teacher Candidacy status for Elementary, Secondary and Child Development and Family Relations (ECE) or acceptance into Education minor

**Course Typically Offered:** Fall and Spring

Credits: 3

## **EHD 298 - Teacher Candidacy Field Experience**

Students will observe in educational settings social agencies or working with K-12 schools, complete field experience guidelines report and assist teachers and professionals. May be repeated for a total of three credits.

**Prerequisites:** permission.

**Course Typically Offered:** Fall & Spring

Credits: 1-3

## **EHD 301 - Classroom-based Prevention and Intervention: Supporting Positive Behavior and Academic Achievement**

This course examines the application of prevention and intervention theory and practice within classroom settings. Theoretical perspectives on risk and resilience as they pertain to the development of competent social behaviors, including those found to facilitate social relationships, serve as academic enablers, and promote self-determination will be addressed. Applied behavioral analysis, social learning theory, and the eco-behavioral framework will serve as the primary intellectual roots for this course. Particular emphasis will be given to creating a comprehensive classroom plan based on evidence-based practices and implemented within a cohesive system of behavioral and academic support and intervention. Contextual factors such as home, community, race, culture and SES, within the broader domain of social justice will provide the ecological backdrop of our study.

**Prerequisites:** EHD 101 or permission

**Course Typically Offered:** Fall and Spring

Credits: 3

## **EHD 400 - Field Observation (Activity)**

Study of education programs through visits, consultation and appraisal of practices in selected schools, instructional centers, clinics, laboratories and community agencies. Observations are considered in relation to research theory and practice.

**Corequisites:** To be taken in conjunction with methods course(s).

**Course Typically Offered:** Fall & Spring

Credits: 1-6

### **EHD 421 - Literacy Across the Curriculum**

Students examine methods for reading and writing instruction in content area classrooms. Hybrid format: conducted online with 8 on-campus meetings.

Credits: 3

### **EHD 425 - Field Experience: Urban and Rural Education**

Exploration of similarities and differences of urban and rural schools, poverty, racial/ethnic diversity, English language learning, culturally responsive education, the needs of students, and the roles of teachers in these schools, through school visits and guest speakers. Encourages students to become aware of the diversity of American culture and schools, and to discover their roles as educators within that diversity. One full-day trip required.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives requirement.

**Prerequisites:** EHD 201

**Course Typically Offered:** Fall and Spring Semesters

Credits: 3

### **EHD 462 - Workshop in Elementary Education (Activity)**

Designed to increase the competence of the elementary school teacher, supervisor, curriculum director, administrator, and other school personnel. Considers literature, research and materials concerned with a special aspect of elementary education.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1-6

### **EHD 472 - Workshop in Secondary Education (Activity)**

Designed to increase competence of the teacher, administrator, and other school personnel. Considers literature, research and materials concerned with a special aspect of secondary education.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1-6

### **EHD 490 - Full-Day Student Teaching (Elementary)**

A full-day, off-campus internship program in a selected school. (Pass/Fail Grade Only.)

**General Education Requirements:** Satisfies the General Education Capstone Experience Requirement.

**Prerequisites:** Early application.

**Course Typically Offered:** Fall & Spring

Credits: 1 - 12

### **EHD 491 - Full-Day Student Teaching (Secondary)**

A full-day, off-campus internship program in a selected school. (Pass/Fail Grade Only.)

**General Education Requirements:** Satisfies the General Education Capstone Experience Requirement.

**Prerequisites:** Early application.

**Course Typically Offered:** Fall & Spring

Credits: 1 - 12

### **EHD 492 - Problems in Education**

Individual work on a problem selected by the student. Primarily for Education majors.

**Course Typically Offered:** Fall, Spring, Summer

Credits: Ar



## **EHD 493 - Alternative Practicum and Seminar in Education**

Alternative capstone experience for students who choose not to seek teacher certification prior to graduation and takes the place of the student teaching experience. Students will develop and implement an approved course of study to include the following components: research review; application of research to practice; reflection; and presentation. May combine a practicum as part of the course of study within the seminar. Students will draw upon academic and professional course work, examine and reflect on their understandings about teaching and learning, apply integrated educational skills and knowledge in approved settings, and develop projects that synthesize academic and professional experiences.

**General Education Requirements:** Satisfies the General Education Capstone Experience Requirement.

**Prerequisites:** Permission from Capstone Supervisor.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3 - 6

## **EHD 494 - Student Teaching K-12 (Art or Music)**

Observation and student teaching in selected elementary and/or secondary schools. (Pass/Fail Grade Only.)

**General Education Requirements:** Satisfies the General Education Capstone Experience Requirement.

**Prerequisites:** Senior standing; EDB 202, EDB 221 or equivalents and a methods course.

**Course Typically Offered:** Fall & Spring

Credits: 1 - 12

## **EHD 496 - Advanced Internship (Elementary)**

A full-day, off-campus advanced internship, teaching in a selected school. Seminars and conferences. (Pass/Fail Grade Only.)

**General Education Requirements:** Satisfies the General Education Capstone Experience Requirement.

**Prerequisites:** STT 490.

**Course Typically Offered:** Variable

Credits: 2-6

## **EHD 497 - Advanced Internship (Secondary)**

A full-day, off-campus advanced internship, teaching in a selected school. Seminars and conferences. (Pass/Fail Grade Only.)

**General Education Requirements:** Satisfies the General Education Capstone Experience Requirement.

**Prerequisites:** STT 491.

**Course Typically Offered:** Variable

Credits: 2-6

### **EHD 498 - Seminar for Interns**

Students examine and reflect on their understanding about teaching and learning, apply integrated educational skills and knowledge and synthesize academic and professional experiences from their courses, field experiences and internships to develop and finalize their Teacher Candidacy portfolio.

**Prerequisites:** Senior standing; completion of all other program requirements or permission.

**Corequisites:** EHD 490 or EHD 491 or EHD 496 or EHD 497 or EHD 499.

**Course Typically Offered:** Fall & Spring

Credits: 1-3

### **EHD 499 - Student Teaching K-12 (Kinesiology and Physical Education)**

Observation and student teaching in selected elementary and/or secondary schools.

**General Education Requirements:** Satisfies the General Education Capstone Experience Requirement.

**Prerequisites:** Senior standing; EDB 202, EDB 221 or equivalents and a methods course.

**Course Typically Offered:** Fall & Spring

Credits: 1 - 12

### **ELL 470 - The Teaching of English As A Second Language**

Basic principles underlying ESL pedagogy and current techniques for second and foreign language teaching. Students review published materials, develop activities, plan lessons, and compile a teaching materials portfolio. For practicing teachers seeking Maine's ESL endorsement or individuals planning to teach EFL overseas.

**Prerequisites:** junior standing.

**Course Typically Offered:** Fall & Summer

Credits: 3

### **ELL 475 - Curriculum Development in English As A Second Language/English As A Foreign Language Contexts**

Hybrid online-plus-workshops course instruction in principles of syllabus design and processes for ESL/EFL curriculum development. For practicing teachers seeking Maine's ESL endorsement or individuals planning to teach EFL overseas. Also suitable for those preparing to teach a second language other than English.

**Prerequisites:** ELL 470 or permission of instructor.

**Course Typically Offered:** Fall & Summer

Credits: 3

### **ELL 480 - Testing and Assessment in English As A Second Language/English As A Foreign Language Contexts**

Principles of second/foreign language assessment. Examines various instruments and procedures: helps students develop reliable and valid techniques; explores placement and diagnosis; reviews curriculum and program evaluation. For practicing teachers seeking Maine's ESL endorsement or individuals planning to teach EFL overseas. Also suitable for those preparing to teach a second language other than English.

**Prerequisites:** junior standing.

**Course Typically Offered:** Spring, Summer

Credits: 3

### **ELL 485 - Applied Linguistics and Second Language Acquisition Principles for ESL/EFL Teachers**

Basic linguistic concepts and principles from research into how humans learn to communicate in a second or foreign language. Application of these concepts and principles to facilitating acquisition in English language instructional contexts. For practicing teachers seeking Maine's ESL endorsement or individuals planning to teach EFL overseas.

**Prerequisites:** junior standing.

**Course Typically Offered:** Summer

Credits: 3

## **ELL 491 - Multiculturalism and Diversity for ESL/EFL Contexts**

Diversity training and personal reflection to raise awareness of and to challenge biases about difference. Focus on attitudes toward language, dialect, or accent difference. Issues related to cultural diversity in communication styles, values systems, instructional role expectations, and paths to identity formation. For practicing teachers seeking Maine's ESL endorsement or individuals planning to teach EFL overseas.

**Prerequisites:** Junior standing.

**Course Typically Offered:** Variable

Credits: 3

## **EMA 314 - Teaching Mathematics in Elementary School**

An instruction to methods and techniques in teaching mathematics, arithmetic readiness program, instructional and evaluation material.

**Prerequisites:** Elementary Education majors; MAT 107 and PSY 100.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **ENG 100 - College Composition Stretch, Part I**

This course provides intense practice with habits of reading, writing, thinking, and revising essential to postsecondary academic work. Designed for students who want to create a strong foundation for themselves in academic reading and writing. Available only during fall semester. Students who complete ENG 100 move on to ENG 106 during the spring semester. Students will not earn credit or grades for completing both ENG 101 and either course in the College Composition Stretch Sequence, ENG 100 and ENG 106.

**General Education Requirements:** Students must complete both ENG 100 and Eng 106 with a minimum grade of C or better in each course to satisfy the General Education College Composition requirement. Neither course taken alone will satisfy this requirement.

**Course Typically Offered:** Fall

Credits: 3

## **ENG 101 - College Composition**

Students practice the ways in which writing serves to expand, clarify, and order experience and knowledge, with particular attention to persuasive writing. Satisfactory completion of the course depends upon quality of weekly writing assignments as well as demonstration of proficiency in college-level writing.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

## **ENG 106 - College Composition Stretch, Part II**

This course provides intense practice with habits of reading, writing, thinking, and revising essential to postsecondary academic work. Designed for students who want to create a strong foundation for themselves in academic reading and writing. Available only during the spring semester. Students will not earn credit or grades for completing both ENG 101 and either course in the College Composition Stretch Sequence, ENG 100 and ENG 106.

**General Education Requirements:** Students must complete both ENG 100 and ENG 106 with a minimum grade of C or better in each course to satisfy the General Education College Composition requirement. Neither course taken alone will satisfy this requirement.

**Prerequisites:** C or better in ENG 100

**Course Typically Offered:** Spring

Credits: 3

## **ENG 129 - Topics in English**

Offers small-group discussions of literature focusing on a common theme. Each division takes up a different theme, such as utopianism, the quest myth, growing up in America and the like. Students can expect to read texts closely and write regularly about them. May be repeated for credit.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** Open to first-year students only. May be taken before or after ENG 101 or concurrently with permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

## **ENG 131 - The Nature of Story**

Explores the fundamental activity of why and how we create, tell and read/listen to stories. Readings may include selections from folk tale and myth, saga and epic, drama and novel, film and song, poetry and essay--from the ancient world to the modern, from

the western cultural tradition and from a variety of other cultures.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Cultural Diversity and International Perspectives Requirements.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **ENG 170 - Foundations of Literary Analysis**

An introduction to the close reading of literature. Students write frequently, exploring how conventions of genre, form, and style work in literature. Required of English majors.

**Prerequisites:** ENG 101 is strongly recommended.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **ENG 205 - An Introduction to Creative Writing**

Offers students experience in writing in three major forms: autobiographical narrative, fiction, and poetry.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression and Writing Intensive Requirements.

**Prerequisites:** ENG 101 is strongly recommended.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

## **ENG 206 - Descriptive and Narrative Writing**

Special emphasis on the informal, autobiographical essay.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression and Writing Intensive Requirements.

**Prerequisites:** ENG 101 or equivalent.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **ENG 212 - Persuasive and Analytical Writing**

Designed for students wanting practice in those forms of expository, analytical, and persuasive prose required in writing answers to essay test questions, term papers, research projects, and extended arguments.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** ENG 101 and sophomore standing.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **ENG 222 - Reading Poems**

Focuses on helping students develop critical skills particularly suited to the interpretation and analysis of poetry. Readings will include poems from different eras in both traditional and innovative forms. May cover a range of poetic practices and a variety of media: including, for example, poetry readings, little magazines and presses, digital texts, and poetic movements.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition, Artistic and Creative Expression and Writing Intensive Requirements.

**Prerequisites:** 3 hours of English.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **ENG 229 - Topics in Literature**

Subject matter varies with faculty interest. Previous topics have included: scandalous women, detective fiction, vampires in literature, dark humor in literature, and literature of the Vietnam war. May be repeated for credit.

**Prerequisites:** 3 hours of English.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

## **ENG 231 - Western Tradition in Literature: Homer Through the Renaissance**

Survey of the major writers in the Western literary tradition. The development of our cultural heritage and the evolution of major literary forms. (This course is identical to MLC 231.)

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Artistic and Creative Expression Requirements.

**Prerequisites:** 3 hours of English.

**Course Typically Offered:** Variable

Credits: 3

## **ENG 235 - Literature and the Modern World**

An examination of the modern sensibility as it has manifested itself in 20th century literature. Some attention also to the history, music, visual arts, social thought, and science of the contemporary epoch.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition, Artistic and Creative Expression and Ethics Requirements.

**Prerequisites:** 3 hours of English.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

## **ENG 236 - Intro to Canadian Literature**

A survey of Canadian literature from 1850 to the present. Interpretation and analysis of the poetry and prose of major literary figures. Some examination of the impact of British and American models upon the tradition of Canadian literature.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives, Artistic and Creative Expression and Ethics Requirements.

**Prerequisites:** 3 hours of English.

**Course Typically Offered:** Every Year

Credits: 3

## **ENG 237 - Coming of Age in America**



The process of moving from innocence to experience has many faces in America, as our literature in the last few decades has begun to chronicle. Explores stories of coming of age in American fiction, nonfiction and film of the last fifty years from writers to many traditions, including Franco-American, Latino-Latina, Native American, African-American and Asian-American.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** 3 hours of English.

**Course Typically Offered:** Variable

Credits: 3

### **ENG 238 - Nature and Literature**

Looks at the many different ways people have looked at nature and examines the philosophies and values which inform humans' interactions with their environment. Authors will be drawn from traditional literary figures, American nature writers, environmentalists and especially, authors from Maine. Assignment may include field experience.

**General Education Requirements:** Satisfies the General Education Ethics Requirement.

**Prerequisites:** 3 hours of English.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **ENG 243 - Topics in Multicultural Literature**

Topics will vary, including such titles as Ethnicity and Race in American Literature; Caribbean Literature; Third World Literature; and other topics in African, Asian, Francophone, Native American, Chicano and ethnic literatures in the English language.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition, Cultural Diversity and International Perspectives and Ethics Requirements.

**Prerequisites:** 3 hours of English.

**Course Typically Offered:** Variable

Credits: 3

### **ENG 244 - Writers of Maine**

An exploration of the varied nature of the Maine experience as exemplified by writers of fiction, poetry, essays, and other creative genres.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition, Artistic and Creative Expression and Ethics Requirements.

**Prerequisites:** 3 hours of English, or permission of instructor.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **ENG 245 - American Short Fiction**

A study of genre, form, and theme in representative works of American short fiction from Irving to the present.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition, Artistic and Creative Expression and Ethics Requirements.

**Prerequisites:** 3 hours of English.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **ENG 246 - American Women's Literature**

A survey of the main traditions and writers in American women's literature from the origins to the present.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition, Cultural Diversity and International Perspectives and Ethics Requirements.

**Prerequisites:** 3 hours of English.

**Course Typically Offered:** Alternate Years

Credits: 3

### **ENG 249 - American Sports Literature and Film**

Uses readings in fiction, poetry, drama, essays and films to explore social, humanistic, ethical and aesthetic issues in sports and its literature. Examines ways writers capture physical action and the role of sports in various genres and media.

**General Education Requirements:** Satisfies the General Education Ethics and Artistic and Creative Expression Requirements.

**Prerequisites:** 3 hours of English.

**Course Typically Offered:** Spring, Even Years

Credits: 3

### **ENG 251 - English Literature Survey: Beginnings Through Neoclassicism**

The major patterns of development within the English literary tradition, with emphasis on the cultural and historical forces which have shaped this tradition.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Artistic and Creative Expression Requirements.

**Prerequisites:** 3 hours of literature or permission. (ENG 170 recommended.)

**Course Typically Offered:** Fall

Credits: 3

### **ENG 253 - Shakespeare: Selected Plays**

A study of ten to twelve plays, selected to represent the range of Shakespeare's achievement as a playwright. Recommended for non-majors. Not open to students who have taken ENG 453.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition, Artistic and Creative Expression and Ethics Requirements.

**Prerequisites:** 3 hours of English.

**Course Typically Offered:** Every Year

Credits: 3

### **ENG 256 - British Women's Literature**

A survey of British women writers and their traditions from the origins to the present.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition, and Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** 3 hours of English.

**Course Typically Offered:** Alternate Years

Credits: 3

## **ENG 271 - The Act of Interpretation**

An introduction to critical theory. Study of individual critics or schools of literary theory. Application of these interpretative strategies to literary texts.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Writing Intensive Requirements.

**Prerequisites:** ENG 170.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **ENG 280 - Introduction to Film**

A survey of the history of motion pictures and an exploration of the rhetoric of film, designed to give students with no prior film study an integrated approach to understanding the moving image and how it functions.

**General Education Requirements:** Satisfies the General Education Social Context and Institutions and Artistic and Creative Expression Requirements.

**Prerequisites:** 3 hours of English.

**Course Typically Offered:** Variable

Credits: 3

## **ENG 301 - Advanced Composition**

A seminar that combines writing practice with the study of composition theory, helping students to gain command of a range of academic styles.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** ENG 212 or ENG 395.

**Course Typically Offered:** Spring

Credits: 3

### **ENG 307 - Writing Fiction**

The writing of fiction, for students of demonstrated ability. Submission of writing sample.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** ENG 205 or ENG 206 and approval of a portfolio by instructor

**Course Typically Offered:** Fall

Credits: 3

### **ENG 308 - Writing Poetry**

A course in the writing of poetry, for students of demonstrated ability.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** ENG 205 or ENG 206 or permission of instructor. Submission of writing sample.

**Course Typically Offered:** Spring

Credits: 3

### **ENG 309 - Writing Creative Nonfiction**

An intermediate course in such forms of creative nonfiction as memoir, travel literature, autobiography and personal essays.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression and Writing Intensive Requirements.

**Prerequisites:** ENG 205 or ENG 206 or ENG 212 or permission.

**Course Typically Offered:** Fall

Credits: 3

### **ENG 315 - Research Writing in the Disciplines**

Builds on ENG 101 by preparing students for writing-intensive coursework and for senior capstone projects. This course focuses on similarities and differences among the types of peer-reviewed academic research articles that researchers and scholars use to advance knowledge in their fields. Class projects will develop familiarity with and contribute to students' own academic research writing in their chosen field of study.

**General Education Requirements:** Satisfies the Writing Intensive General Education Requirement.

**Prerequisites:** Junior standing and a declared major.

**Course Typically Offered:** Fall and Spring.

Credits: 3

### **ENG 317 - Business and Technical Writing**

Supervised practice in the writing of business and technical reports, professional correspondence, and related materials.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** ENG 101 or equivalent and junior standing.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **ENG 336 - Canadian Literature**

An intensive study of a major Canadian writer or small group of Canadian writers, or an examination of a major theme in Canadian literature. Specific topic varies from semester to semester. This reading-intensive course is designed to teach students about Canadian literature while giving them the opportunity to practice their reading and research skills in order to better prepare them for work in advanced seminars.

**General Education Requirements:** Satisfies the General Education Ethics and Writing Intensive Requirements.

**Prerequisites:** 6 credits beyond ENG 101 (ENG 170 and ENG 222 recommended) or instructor permission

**Course Typically Offered:** Alternate Years

Credits: 3

### **ENG 341 - Colonial and Early National American Literature**

The literatures of colonial America began almost immediately after contact between Europeans and Native Americans in the

fifteenth century, disseminated in multiple languages across Europe. These earliest writings were advertisements for empire: tales of adventure, catalogues of wonders, justifications and warnings. By the seventeenth century, new immigrants and American-born settlers were creating a local literature for local consumption, including the great devotional works of the New England Puritans and the first examples of that long-lived American genre, the captivity narrative. This colonial period culminated in the eighteenth century's American Enlightenment, which gave rise to the Revolution, and was soon followed by the first stirrings of literary nationalism in the early republic. Encompassing three hundred years of history and an international range of authors, this introductory course may include works translated into English and taking such representative forms as the memoir, travel narrative, sermon, and political tract, as well as the more expected literary genres of poetry, fiction, and drama. A reading-intensive course, it is designed to teach students about a crucial epoch in world history and American literature while creating an opportunity for students to practice reading and research skills in order to better prepare them for work in advanced seminars.

**General Education Requirements:** Western Cultural Tradition and Cultural Diversity or International Perspectives

**Prerequisites:** 6 credits beyond ENG 101 (ENG 170 and ENG 222 recommended) or instructor permission

**Course Typically Offered:** Alternate Years

Credits: 3

## **ENG 342 - Native American Literature**

Surveys literature by Native American authors from a wide range of tribal backgrounds and culture areas. Considers the development of written traditions over time in relation to oral genres, traditional themes and story forms, and situates writing by Native American people in the context of historical and socio-political events and trends in Turtle Island (North America). Provides the opportunity to reconsider stories of colonization and the Anglo-American culture/nation in the light of indigenous perspectives and experience. This reading-intensive course is designed to teach you about the history of Native American writing in English, while giving you the opportunity to practice your reading and research skills in order to prepare you for work in advanced seminars.

**General Education Requirements:** Western Cultural Tradition and Cultural Diversity and International Perspectives.

**Prerequisites:** 6 credits beyond ENG 101 (ENG 170 and ENG 222 recommended) or instructor permission.

**Course Typically Offered:** Alternate Years.

Credits: 3

## **ENG 343 - Nineteenth-Century American Literature**

An introduction to American literature and culture of the nineteenth century, a period of unprecedented violence, vision, and change encompassing some of the most storied names in poetry and prose. Because the historical events and social turmoil of the century is so crucial for an understanding of its greatest authors, the course may include writers and thinkers whose primary significance is not literary—men and women who witnessed or acted in the great events of the age. This reading-intensive course is designed to teach students about a rich, exciting epoch in literary history while giving them the opportunity to practice their reading and research skills in order to better prepare them for work in advanced seminars.

**General Education Requirements:** Western Cultural Tradition

**Prerequisites:** 6 credits beyond ENG 101 (ENG 170 and ENG 222 recommended) or instructor permission

**Course Typically Offered:** Alternate Years

Credits: 3

### **ENG 351 - Medieval English Literature**

An introduction to Medieval Literature which involves reading the wild, beautiful, idiosyncratic, and foreign yet strangely familiar works of Chaucer and his English contemporaries. The class will focus on understanding the nature of the medieval world and its expression in the literature of the time, and on developing reading skill in Middle English. This reading-intensive course is designed to teach students about a crucial epoch in literary and linguistic history while giving them the opportunity to practice their reading and research skills in order to better prepare them for work in advanced seminars. For more details see course descriptions on the English Department website.

**General Education Requirements:** Western Cultural Tradition

**Prerequisites:** 6 credits beyond ENG 101 (ENG 170 and ENG 222 recommended) or instructor permission

**Course Typically Offered:** Alternate Years.

Credits: 3

### **ENG 353 - Shakespeare and the English Renaissance**

Renaissance suggests a rebirth of classical models, but this period (late 16th and early 17th centuries) is also one of startling innovation. The literature of Shakespeare and his contemporaries can be wildly comic and tragic, lyrical and grotesque, epic and domestic, rewriting the medieval and anticipating the modern worlds. Emphasis may vary among genres (drama, lyric, narrative poetry), theme (romance, revenge, rebellion, reverence), and authors (Shakespeare, Spenser, Marlowe, Donne, Milton for example). This reading intensive course introduces representative texts from a crucial period in literary history, and it provides students the opportunity to practice reading and research skills in preparation for work in advanced seminars.

**General Education Requirements:** Western Cultural Tradition

**Prerequisites:** 6 credits beyond ENG 101 (ENG 170 and ENG 222 recommended) or instructor permission

**Course Typically Offered:** Alternate Years

Credits: 3

### **ENG 355 - Restoration and Eighteenth-Century British Literature**

From sentiment to sadism, astounding change ignited the Restoration and Eighteenth Century, making this period a watershed



that marks the transition from Renaissance to Modern. This reading-intensive class will consider literature against the background of this historical change, inheritance, and influence. Works by Pope, Behn, Cavendish, Finch, Congreve, Dryden, Swift, Defoe, Richardson, Johnson, and Radcliffe, among others. The focus on reading and research skills will prepare students for work in advance seminars.

**General Education Requirements:** Western Cultural Tradition.

**Prerequisites:** 6 credits beyond ENG 101 (ENG 170 and ENG 222 recommended) or instructor permission

**Course Typically Offered:** Alternate Years

Credits: 3

### **ENG 357 - Nineteenth-Century British Literature**

This reading intensive course introduces Nineteenth-century British literature in the context of larger political, technological, cultural, and social changes: The expanding publishing market, the growing influence of a literate middle-class, industrialization, urbanization, global capitalism and modern warfare, Britain's imperial power. Because of the sheer variety of works and genres, emphasis will vary from instructor to instructor, but along with well-known writers like Wordsworth, Austen, or Dickens, students will be introduced to lesser-known authors, popular and influential in their day but too often forgotten since. This course provides students with the opportunity to practice reading and research skills and prepares students for work in advanced seminars. For more details see Course Descriptions on the English Department website.

**General Education Requirements:** Satisfies the Western Cultural Tradition General Education Requirement

**Prerequisites:** 6 credits beyond ENG 101 (ENG 170 and ENG 222 recommended) or instructor permission

**Course Typically Offered:** Spring, Even Years

Credits: 3

### **ENG 361 - Modernism**

An introduction to modernism, the revolution in literature and culture that took place during the end of the nineteenth century and the first half of the twentieth century. Because modernism was an international movement expressed in multiple genres, this introductory course may include writers and artists from around the world working in poetry, prose, drama, and film. This reading-intensive course is designed to teach students about a crucial period in literary history while giving them the opportunity to practice their reading and research skills in order to better prepare them for work in advanced seminars.

**General Education Requirements:** Satisfies the Western Cultural Tradition General Education Requirement.

**Prerequisites:** 6 credits beyond ENG 101 (ENG 170 and ENG 222 recommended) or instructor permission

**Course Typically Offered:** Fall, Even Years

Credits: 3

## **ENG 363 - Literature of the Postmodern Period**

An introduction to literature of the postmodern period, roughly defined as 1945-1989. To call the historical-literary period and writing styles that emerged after WWII "postmodern" can spark a lively argument. But, whatever your position, the fact remains that during this extraordinary times poets, playwrights, and novelists responded to a world changed by WWII in intelligent and challenging ways. Continuing modernist-period fluidity across national borders as well as genres, this reading-intensive course may include writers from around the world working in poetry, prose, and drama. It is designed to teach students about a crucial period in recent literary history while giving them the opportunity to practice their reading and research skills in order to better prepare them for work in advanced seminars. For more details, see course descriptions on the English Department website.

**General Education Requirements:** Satisfies the Western Cultural Tradition General Education Requirement

**Prerequisites:** 6 credits beyond ENG 101 (ENG 170 and ENG 222 recommended) or instructor permission

**Course Typically Offered:** Spring, Odd Years

Credits: 3

## **ENG 364 - Contemporary Literature**

An introduction to literature after 1989 and up to the present. Studying the living tradition can be incredibly exciting. From writers working in our moment we can gain a unique perspective on our world, which may help us to develop a nuanced reading of the broader culture we both consume and participate in. Because contemporary literature often defies easy genre distinctions, and sometimes even the conventional idea of the book, this course may include multiple genres and cross-genre forms, and a variety of media, from sound files to digital literature. This reading-intensive course is designed to teach students about literature emerging in our time while giving them the opportunity to practice their reading and research skills in order to better prepare them for work in advanced seminars.

**General Education Requirements:** Satisfies Western Cultural Tradition General Education Requirement.

**Prerequisites:** 6 credits beyond ENG 101 (ENG 170 and ENG 222 recommended) or instructor permission

**Course Typically Offered:** Spring, Even Years

Credits: 3

## **ENG 371 - Readings in Literary Theory and Criticism**

This reading-intensive course is designed to acquaint students with a wider range of theoretical and critical texts, concepts, and perspectives than can typically be covered in core requirement classes such as English 170 and 271 (both of which are strongly recommended). Emphasis will be given to theories of signification (semiotics), representation (mimesis), and interpretation (hermeneutics) that have informed the practice of literary analysis from antiquity to the present day. The course will also provide students with the opportunity to practice their reading and research skills in order to better prepare them for work in advanced seminars such as English 470: Topics in Literary Theory and Criticism.

**General Education Requirements:** Satisfies the Western Cultural Tradition General Education Requirement.

**Prerequisites:** 6 credits beyond ENG 101 (ENG 170 and ENG 222 recommended) or instructor permission

**Course Typically Offered:** Spring, Odd Years

Credits: 3

### **ENG 381 - Themes in Literature**

When we approach study of literature thematically, surprising connections can emerge. In this reading-intensive course, we will trace a single, defined theme through multiple literary works. This journey through a particular theme is a delightful way for you to practice your reading and research skills in preparation for advanced seminars. Can be taken more than once for credits, provided that the theme covered is different.

**General Education Requirements:** Satisfies the Western Cultural Tradition General Education Requirement

**Prerequisites:** 6 credits beyond ENG 101 (ENG 170 and ENG 222 recommended) or instructor permission

**Course Typically Offered:** Every Year

Credits: 3

### **ENG 382 - Major Genres in Historical Perspective**

Tragedy, comedy, lyric, novel, play or film: these are just a few of the divisions, called "genres" that we use to distinguish one kind of literary art from another. Continuing and deepening the work begun in 170 and/or 222, Major Genres in Historical Perspectives is a reading-intensive course on the thematic and technical developments of one specific genre within a broader cultural and historical framework. This theoretical approach to genre studies will allow students to spend more time reading in a genre they love, while giving them the opportunity to practice their research skills in preparation for work in advanced seminars. May be taken more than once for credit, provided the genre covered is different.

**General Education Requirements:** Satisfies the Western Cultural Tradition General Elective

**Prerequisites:** 6 credits beyond ENG 101 (ENG 170 and ENG 222 recommended) or instructor permission

**Course Typically Offered:** Every Year

Credits: 3

### **ENG 395 - English Internship**

An advanced course in writing and collaborative learning. Students first experience collaborative work in essay writing, critical

reading of peers' essays, and rigorous practice in written and oral criticism. They participate in supervised tutoring in the English Department's writing center.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** ENG 101 or equivalent and at least one other writing intensive course, a recommendation from a UM faculty member, submission of writing sample and permission.

**Course Typically Offered:** Fall

Credits: 3

## **ENG 402 - Topics in Writing and Research**

A seminar concentrating on a specific topic or concern in undergraduate research and writing. This course emphasizes theoretical and practical approaches to research by engaging participants in a sustained research project. May be repeated for credit when topic varies.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** English Majors with Junior or Senior standing

**Course Typically Offered:** Every Year

Credits: 3

## **ENG 405 - Topics in Creative Writing**

A senior level course designed to provide students with an opportunity to work intensively in a specifically defined genre, form, or methods of creative writing. May also address the broader issues of production and publication. Sample topics: graphic novel, hypertext, mixed-media, electronic writing, translation, traditional poetic forms, the epic, publication, book-making, magazine editing, the serial poem, the long poem, collaboration. ENG 405 and/or ENG 406 may be taken for credit up to a total of 6 credit hours.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** Permission of instructor.

**Course Typically Offered:** Variable

Credits: 3

## **ENG 407 - Advanced Fiction Writing**

A fiction workshop at the advanced level. This is the advanced level course for fiction writers in the English concentration in creative writing, and may be taken in tandem with ENG 499 (capstone experience). May be repeated once for credit.

**Prerequisites:** ENG 307 and permission of Instructor.

**Course Typically Offered:** Spring

Credits: 3

### **ENG 408 - Advanced Poetry Writing**

A poetry workshop at the advanced level. This is the advanced level course for poets in the English concentration in creative writing, and may be taken in tandem with ENG 499 (capstone experience). May be repeated once for credit.

**Prerequisites:** ENG 308 and permission of instructor.

**Course Typically Offered:** Fall

Credits: 3

### **ENG 415 - Advanced Report & Proposal Writing**

Prepares students to write workplace proposals and reports. Students will spend approximately four weeks analyzing proposals - including grant proposals - and reports. Students will spend the next eight weeks researching and writing a grant proposal, a project proposal, or an analytical report. When possible, students will work on projects for campus clients. The last three weeks of the semester will focus on exploring visual and audio reports, including designing electronic materials that support oral presentations and preparing audio reports using podcast technology. This course will be taught as a workshop with student writers sharing drafts, providing peer feedback, and working as collaborators. Appropriate for senior students in the Technical/Professional Writing track; for graduate students; and for professionals interested in examining the genre of report writing.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** ENG 317 or permission.

**Course Typically Offered:** Spring

Credits: 3

### **ENG 416 - Technical Editing & Document Design**

Focuses on print and online editing, including the use of traditional proofreading marks and online techniques, document layout and design, principles of copywriting, and the study of style manuals. Follows two lines of study: one of editing / text crunching

practices and one of print document design principles and practices related to the editing of documents. The cornerstone of the course is producing a newsletter or other document for a client.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** ENG 317 or permission.

**Course Typically Offered:** Fall

Credits: 3

### **ENG 418 - Topics in Professional Writing**

Topics vary according to changes in the field, expertise of the faculty, and needs of the students. Possible topics include editing, document design and desktop publishing, and professional writing in intercultural contexts. May be repeated for credit.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** 6 credits in writing, including ENG 317, and permission of instructor.

**Course Typically Offered:** Variable

Credits: 3

### **ENG 429 - Topics in Literature and Language**

Studies in the various topics concerning literature connected to faculty research interests (for example, utopian literature, the graphic novel, revenge in literature) or in issues pertaining to questions of language and literature, such as modern grammar, history of the English language, Old and Middle English, or theories of semiotics and linguistics brought to literary analysis. Specific topic varies from year to year. May be repeated for credit as long as the topic is different.

**Prerequisites:** ENG 271 plus 6 hours of 300-level literature courses or instructor permission

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **ENG 440 - American Seminar**

A seminar on an American writer or writers or a focused epoch or movement in American literature. Topics vary, depending on the professor. Student research and writing will be emphasized.

**General Education Requirements:** Satisfies the General Education Ethics and Writing Intensive Requirements.

**Prerequisites:** ENG 271 plus 6 hours of 300-level literature courses or instructor permission

**Course Typically Offered:** Variable

Credits: 3

### **ENG 445 - The American Novel**

Readings from the major American novelists: Stowe, Melville, James, Twain, Dreiser, Wharton, Hemingway, Fitzgerald, Cather, and Faulkner, among others. Focus on thematic, technical, and narrative developments in the 19th and 20th century American novel.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** 6 hours of literature or permission.

**Course Typically Offered:** Every Year

Credits: 3

### **ENG 459 - British Seminar**

A seminar on a British writer or writers or a focused epoch or movement in British literature. Topics vary, depending on the professor. Student research and writing will be emphasized.

**General Education Requirements:** Satisfies the General Education Ethics and Writing Intensive Requirements.

**Prerequisites:** ENG 271 plus 6 hours of 300-level literature courses or instructor permission

**Course Typically Offered:** Alternate Years

Credits: 3

### **ENG 460 - Major Authors**

An in-depth seminar of from one to three major writers. Topics vary, depending on the professor. Student research and writing will be emphasized. May be repeated for credit.

**General Education Requirements:** Satisfied the Ethics and the Writing Intensive General Education requirements.

**Prerequisites:** ENG 271 plus 6 hours of 300-level literature courses or instructor permission

**Course Typically Offered:** Not Regularly offered

Credits: 3

### **ENG 470 - Topics in Literary Theory and Criticism**

Studies in the history of literary criticism, in selected theoretic perspectives, or in the application of specific critical approaches. Specific topic varies from year to year.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** ENG 271 plus 6 hours of 300-level literature courses or instructor permission

**Course Typically Offered:** Variable

Credits: 3

### **ENG 471 - Literature, Gender, and Gender Theory**

Introduction to gender theory and issues of gender as reflected in the reception, interpretations, and transmission of literary texts. Emphasis on cultural assumptions surrounding gender, which involve both women and men.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** ENG 271 plus 6 hours of 300-level literature courses or instructor permission

**Course Typically Offered:** Alternate Years

Credits: 3

### **ENG 490 - Research Seminar in Literature**

A seminar course on a small body of primary literary texts and the critical communities concerned with them. Students propose and write original researched papers that demonstrate knowledge of current research in the field, using appropriate research methods and conventions of scholarly bibliography.

**General Education Requirements:** Satisfies the General Education Writing Intensive and Capstone Experience Requirements.

**Prerequisites:** ENG 271 and 6 hours of 300 or 400 level literature courses or instructor permission

**Course Typically Offered:** Every Year

Credits: 3



## **ENG 496 - Field Experience in Professional Writing**

Students work with businesses, professions, and other organizations approved by the department. The work in the course varies with each student enrolled and with the needs of the cooperating employer but normally involves either research, public relations, reporting, editing, interviewing, indexing, or other allied activity requiring skill in reading and writing. May be repeated for credit up to 6 credit hours.

**General Education Requirements:** Satisfies the General Education Capstone Experience Requirement.

**Prerequisites:** 9 hours of writing including ENG 317 and permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1-6

## **ENG 497 - Independent Study in English**

Advanced study and research in literature and/or theory not covered by other courses.

**Prerequisites:** Senior Standing and permission of the instructor. May not be repeated.

**Course Typically Offered:** Variable

Credits: 1-3

## **ENG 499 - Capstone Experience in English**

Pre-professional experience supervised by an English faculty member, attached to an appropriate 3 credit English course (i.e. completion of a substantial critical paper based upon content of a 400-level literature course; a semester tutoring in the Writing Center after ENG 395: English Internship; ENG 496: Field Experience; or completion of a finished manuscript after an appropriate 400-level creative writing course. (Pass/Fail Grade Only.)

**General Education Requirements:** Satisfies the General Education Capstone Experience Requirement.

**Prerequisites:** Senior English major and permission of department

**Course Typically Offered:** Fall, Spring, Summer

Credits: 0

## **ERL 317 - Children's Literature**

An overview of literature written for children between the ages of four and twelve. Emphasis on developing criteria for evaluating various types of books and selecting for individual children.

**Prerequisites:** Elementary Education major or Child Development and Family Relations-Early Childhood Education major; Junior standing; and English Literature Course.

**Corequisites:** ERL 319

**Course Typically Offered:** Fall & Spring

Credits: 3

### **ERL 319 - Teaching Reading and Language Arts in Preschool to Grade 3**

Current methods, materials, and assessment tools in teaching reading and writing to children preschool to grade three, including early literacy development, guided reading/shared reading, spelling and oral language development, handwriting instruction, the writing processes of young children, and reading and writing reciprocity in literacy development. Field experience required as part of the course.

**Prerequisites:** Elementary Education major or Child Development and Family Relations-Early Childhood Education option major; junior standing; PSY 100.

**Corequisites:** ERL 317

**Course Typically Offered:** Fall & Spring

Credits: 4

### **ERL 320 - Teaching Reading and Language Arts in Grades 4-8**

Current methods, materials, strategies, and assessment tools to teach and assess reading and writing in grades 4-8, including the foundation for teaching using vocabulary, content area reading, the reading/writing connection, narrative and informational text, and print skills with intermediate/middle grades students.

**Prerequisites:** Elementary Education major; Junior standing; ERL 317, ERL 319, PSY 100.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **ERL 440 - Teaching Reading in the Secondary School**

An exploratory course for high school teachers who wish to develop competence in teaching reading. Includes the nature of the

reading process, rationales for continuing reading instruction in junior and senior high schools, reading and study strategies, improving rates of reading, organization, evaluation.

**Prerequisites:** Secondary Education majors.

**Course Typically Offered:** Fall

Credits: 3

## **ERS 100 - An Introductory Survey of Geology**

An introduction for non-science majors to the main features and processes included in the science of geology. This course has two main goals: (1) To develop an appreciation by the students of the scientific method as applied by geologists, and (2) To develop in the students an appreciation of the aesthetic, social, political, environmental and economic aspects of the topics included in the study of geology. Course may include one weekend field trip. Students may not receive credit for both ERS 100 and ERS 101. Lec 3.

**General Education Requirements:** Satisfies the General Education Applications of Scientific Knowledge Requirement.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **ERS 101 - Introduction to Geology**

A study of earth materials and processes, including their impact on humans. Topics include mineralogy, formation of igneous, metamorphic and sedimentary rocks, geologic time, weathering and soil formation, glaciation, deserts and desertification, coastlines, earthquakes and seismology, and evolution of mountain belts and plate tectonics. Laboratory work includes the study of rocks, minerals, topographic maps and aerial photographs in preparation for a one-day weekend field trip to Acadia National Park.

Students may not receive credit for both ERS 100 and ERS 101. Lec 3, Lab 3.

**General Education Requirements:** Satisfies the General Education Lab in the Basic or Applied Sciences Requirement.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 4

## **ERS 102 - Environmental Geology of Maine**

After developing an understanding of rocks, minerals and geologic time, the course explores the modern distribution of natural geologic resources that limit human activity and influence political and economic decision-making. Examines the impact of humans on the physical and chemical environment and subsequent impact on the biosphere, and geologic hazards. Ends with a detailed look at the terrestrial and marine geologic records related to climate change and explores hypotheses related to the

mechanisms and rates of climate change. The emphasis in the course is on the Maine geologic environment. One-day weekend field trip. Lec 3, Lab 3.

**General Education Requirements:** Satisfies the General Education Laboratory in the Basic or Applied Sciences and Population and the Environment Requirements.

**Course Typically Offered:** Fall & Spring

Credits: 4

### **ERS 103 - Dynamic Earth**

Explores how Earth's dynamic processes interact with humans by evaluating: the interplay between Earth's interior, hydrosphere, biosphere and atmosphere; the effects and underlying causes of natural hazards such as earthquakes, volcanic eruptions, tidal waves and global warming; Earth's economic and energy resources how they form and how long they will last; and the global environment and how best to interact with it. Lec 3.

**General Education Requirements:** Satisfies the General Education Applications of Scientific Knowledge and Population and the Environment Requirements.

**Course Typically Offered:** Spring, Summer

Credits: 3

### **ERS 108 - Beaches and Coasts**

An introduction to coastal landforms, including beaches, salt marshes, tidal flats and sea cliffs, their origins, global distribution, and associated nearshore processes. Human impacts to the coastal zone, including coastal erosion, land loss and management, and human responses to sea-level change are considered. Course may have field trips during class time and a one day field trip. (This course is identical to SMS 108.)

**General Education Requirements:** Satisfies the General Education Applications of Scientific Knowledge and Population and the Environment Requirements.

**Course Typically Offered:** Spring

Credits: 3

### **ERS 121 - Humans and Global Change**

Explores how Earth's climate system works and how past environmental changes affected humans on time scales ranging from interannual to hundreds of thousands of years. Topics will range from the development of agriculture at the beginning of the current interglaciation to how humans are now changing global climate through the addition of greenhouse gases to the atmosphere.

**General Education Requirements:** Satisfies the General Education Population and the Environment Requirement.

**Course Typically Offered:** Fall

Credits: 3

## **ERS 191 - Energy in the Earth System**

Explores the Earth Science concepts that underlie energy, energy sources, distribution, and flow. We will consider the ways in which society interacts with and extracts energy from the Earth System, the climate and environmental implications of energy use, and gain an understanding of renewable and non-renewable energy sources.

**General Education Requirements:** Satisfies the General Education Applications of Scientific Knowledge and Population and the Environment Requirements.

**Course Typically Offered:** Spring and Summer

Credits: 3

## **ERS 200 - Earth Systems**

A survey of dynamic topics in earth sciences, emphasizing active participation in on-going faculty research in topics such as: global climate change, changing sea levels, geochemical cycles, plate tectonics and mountain building, and the geological evolution of the northern Appalachians. Multiple field trips; at least one a weekend. Lec 3, Lab 3.

**General Education Requirements:** Satisfies the General Education Writing Intensive and Lab in the Basic or Applied Sciences Requirement.

**Prerequisites:** any 100-level UMaine Earth Sciences course.

**Course Typically Offered:** Fall

Credits: 4

## **ERS 201 - Global Environmental Change**

Examines the physical and chemical interactions among the primary systems operating at the Earth's surface (atmosphere, hydrosphere, cryosphere, biosphere, lithosphere) on various timescales throughout geologic history. We will consider internal and external forces that have shaped environmental evolution, including the role of humans in recent geochemical and climatic change. During lecture and laboratory sessions, our goals are to develop critical thinking skills and a scientific approach to the complex array of feedbacks operating at the Earth's surface, as well as an appreciation for how past environmental change informs current societal issues. Course will include field trips during class hours and may include weekends.

**General Education Requirements:** Satisfies the General Education Lab in the Basic or Applied Sciences and Population and the Environment Requirements.

**Prerequisites:** Any 100-level ERS course.

**Course Typically Offered:** Spring

Credits: 4

## **ERS 209 - Geology of Maine**

An introduction to the minerals, rocks, groundwater, coastline, geomorphology, geological history, and geoenvironmental problems of Maine. Three weekend field trips.

**Prerequisites:** ERS 100 or ERS 101 or ERS 102 or ERS 103 or permission of instructor.

**Course Typically Offered:** Fall, Even Years

Credits: 3

## **ERS 210 - Geology Applied to Engineering**

Focuses on the interaction between humans and geologic environment at and near the Earth's surface. Course includes the physical and chemical characterization of earth materials and applies these properties to environmental and engineering geology problems. Course may include weekend field trips.

**General Education Requirements:** Satisfies the General Education Population and the Environment requirement. Satisfies the General Education Applications of Scientific Knowledge requirement when taken without ERS 211. Together with ERS 211, this course satisfies the General Education Lab in the Basic or Applied Sciences requirement.

**Prerequisites:** MAT 126

**Course Typically Offered:** Spring, Odd Years

Credits: 3

## **ERS 211 - Geology Applied to Engineering Laboratory**

Focuses on assessing environmental and geologic data and evaluating the natural physical and chemical processes that interface with human activities. Spreadsheet (or similar) software is used to analyze environmental data to quantitatively assess these processes and problems. Course may include weekend field trips.

**General Education Requirements:** Together with ERS 210, this course satisfies the General Education Lab in the Basic or Applied Sciences requirement.

**Prerequisites:** MAT 126

**Corequisites:** ERS 210

**Course Typically Offered:** Spring, Odd Years

Credits: 1

## **ERS 230 - Earth and Climate Science Geomatics**

This course will provide an introduction to the collection, display, manipulation and management of geospatial information. The focus will be on modern tools, techniques and methodologies commonly used by earth and environmental scientists. The course will be divided into surveying and mapping (including GPS), satellite remote sensing, and geographical information systems (GIS). Lec. 2.5 hr, Lab 3hr.

**Prerequisites:** ERS 101 and ERS 102 and ERS 103 or ERS 108 or SMS 108 or permission of instructors.

**Course Typically Offered:** Fall, Even Years

Credits: 4

## **ERS 240 - The Atmosphere**

The nature of planetary atmospheres, physical processes in the atmosphere, clouds and precipitation, global climate, seasons, natural and anthropogenic climate change, forecasting of storms. Lec 3, Lab 2.

**General Education Requirements:** Satisfies the General Education Laboratory in the Basic or Applied Sciences Requirement.

**Course Typically Offered:** Spring, Even Years

Credits: 4

## **ERS 312 - Geochemistry**

Introduction to the field of geochemistry, from Earth formation to modern processes in the deep Earth and at the surface. This course will investigate the chemistry of many Earth materials, including rocks, soils, surface and ground waters, and oceans. Course may include weekend field trips.

**Prerequisites:** CHY 121 & 123, and either ERS 100, ERS 101, ERS 102, or ERS 103.

**Course Typically Offered:** Spring, Odd Years

Credits: 3

## **ERS 315 - Principles of Sedimentology and Stratigraphy**

Basic concepts and techniques of stratigraphy and sedimentation. Field trips to local environments and outcrops. Laboratories emphasize practical analytical techniques of sedimentology, petrography of sedimentary rocks in hand specimens and thin section, and modern stratigraphic approaches. Lec 3, Lab 3.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** ERS 101 or ERS 102 and MAT 232 or permission.

**Course Typically Offered:** Fall

Credits: 4

## **ERS 316 - Structural Geology**

Explores the principles of structural geology, with emphasis on the geometry, kinematics and dynamics of Earth deformation. Includes several field trips with the aim of integrating field observations and theory. Lec 2, Lab 3. Course may have field trips during class times with the aim of integrating field observations and theory.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** ERS 200.

**Course Typically Offered:** Fall, Odd Years

Credits: 4

## **ERS 317 - Introduction to Geophysics**

Introduction to geophysical studies of the Earth. Seismological, gravity, magnetic, electrical and geothermal studies of the Earth's lithosphere are emphasized. Field exercises on one afternoon of selected weeks; course problem solving requires spread sheeting/graphical applications using available personal computers. Lec 3, Lab 3. Course may include weekend field trips.

**Prerequisites:** ERS 101 or ERS 102, and MAT 126 and PHY 111

**Course Typically Offered:** Spring, Even Years

Credits: 3

## **ERS 320 - Research Seminar in Earth and Climate Sciences**



Research seminar course of students with junior or senior standing. Students will attend research presentations by School of Earth and Climate Sciences faculty or graduate students and write short reviews of these presentations with the goals of increasing student understanding and awareness of the role of research in earth and climate sciences and strengthening students' writing skills.

**Prerequisites:** ERS 200 and ERS 201 and Junior or Senior Standing

**Course Typically Offered:** Fall

Credits: 1

### **ERS 321 - Problems in Earth and Climate Sciences**

Students conduct an original investigation and report findings. May not normally be used as a required geology elective. May be repeated for credit.

**Prerequisites:** permission of instructor.

**Course Typically Offered:** Variable

Credits: 1-4

### **ERS 323 - Extreme Weather**

Extreme weather is analyzed in terms of its physical basis as well as historical, economic and human consequences. Emphasis is placed on the interplay between technological advances, the evolution of meteorology as a science, and the impacts of extreme weather (winter storms, severe thunderstorms, tornados, tropical storms, El Nino, floods, droughts, heatwaves, cold waves).

**General Education Requirements:** Satisfies the General Education Quantitative Literacy and Population and Environment requirements.

**Prerequisites:** Recommended: ERS 140 or ERS 121

**Course Typically Offered:** Spring, Odd Years

Credits: 3

### **ERS 330 - Mineralogy**

Examination of fundamental aspects of the materials that record Earth history and the processes that shape the planet. Through a combination of lectures, laboratory sessions, and other active-learning exercises, we explore how minerals form, their structure and composition, and their physical and chemical properties. Through discussions and presentations, we explore the intersection of minerals and society, including industrial applications and modern environmental issues. Throughout the course, we relate

mineralogy to geologic processes and other fields of Earth Science. Lec 3, Lab 2. Course may include weekend field trips.

**Prerequisites:** ERS 200 or ERS 201; CHY 121 and MAT 126 recommended.

**Course Typically Offered:** Spring, Even Years

Credits: 4

### **ERS 340 - Economic Geology**

This course examines the geological characteristics of metallic and industrial mineral deposits, the geological environments and processes responsible for their genesis, the methods used in their discovery and extraction, and the challenges of environmentally responsible reclamation of extraction sites.

**Prerequisites:** ERS 330 or permission.

**Course Typically Offered:** Spring, Even Years

Credits: 3

### **ERS 350 - Fresh-Water Flow**

Focuses on characterizing fresh-water hydrologic systems (Lakes, Rivers, ground water, etc.) and the fluxes of water between these reservoirs. Rates of precipitation, evaporation, channelized flow, overland flow, and infiltration are calculated and used to assess watershed hydrology. Course may include weekend field trips.

**Prerequisites:** MAT 122.

**Course Typically Offered:** Spring

Credits: 3

### **ERS 369 - Energy Resources and Climate Change**

Explores the energy resources used by humans and their climate and environmental implications. Reviews sustainable versus unsustainable energy technologies, predicted trends in local and global climate and environmental conditions, and policies arising from increasing energy demands in a world with limited resources and rapid population growth. Course may include weekend field trips.

**Prerequisites:** Any 100-level ERS course.

**Course Typically Offered:** Fall, Even Years

Credits: 3

## **ERS 408 - Coastal Processes and Coastal Zone Management**

Processes in specific near-shore environments like beaches, tidal flats, estuaries and shelves are discussed in terms of historic and encroaching human impacts. Case histories of successes and failures of attempts to live with coastal processes are presented. The classes are a mix of lectures, student presentations and discussions. Student may not receive credit for both ERS 408 and ERS 508. Course may include weekend field trips.

**Prerequisites:** ERS 108 or SMS 108 or permission

**Course Typically Offered:** Not regularly offered

Credits: 3

## **ERS 420 - Computer Scripting for Data Analysis**

This course focuses on the application of a computer scripting language (Python or similar language) to interpret and analyze earth and environmental science data and processes. Students will learn to use an interpreted computer language to perform calculations, evaluate data sets, create complex graphs and simulate simple systems.

**Prerequisites:** MAT 127.

**Course Typically Offered:** Fall, Odd Years

Credits: 3

## **ERS 433 - Igneous and Metamorphic Petrology**

Using field relationships, rock textures, and chemical systems, we take a qualitative and quantitative system-based approach to exploring rock-forming processes within Earth's crust and mantle. In keeping with the fact that modern understanding of igneous and metamorphic processes requires use of microscopes and microanalysis, students will use petrographic and electron microscopes to make observations and gather data related to mineral chemistry and textures in preparation for later analysis. This course also develops aspects of scientific methodology, including classification schemes and data collection, management, and analysis. Several weekend field trips are required.

**Prerequisites:** ERS 330.

**Course Typically Offered:** Fall, Even Years

Credits: 4

## **ERS 441 - Glaciers and Our Landscape**

Explores the nature of the ice ages, including the work of glaciers and how they shape the earth's surface. Emphasis is on understanding the processes that resulted in the landscape and sediments we see today. Course may have field trips during class times. (ERS 441 and 541 are identical courses and cannot both be taken for degree credit.)

**General Education Requirements:** Satisfies the General Education Population and the Environment and Writing Intensive Requirements.

**Prerequisites:** Any 100 level ERS course or Graduate Standing

**Course Typically Offered:** Fall

Credits: 3

### **ERS 451 - Tectonics**

Exploration of the plate tectonic mechanisms that control and modify the first-order features of Earth's surface. We consider how the movements of the uppermost 100-200 km of our planet creates the topographic features and patterns in the continents and oceans. One weekend field trip.

**Prerequisites:** Any 200-level ERS course or permission.

**Course Typically Offered:** Spring, Odd Years

Credits: 3

### **ERS 461 - Fluvial Processes in Geomorphology**

This course will focus on the forms, dimensions and dynamics of streams and rivers. The material covered will provide an overview of the physical characteristics of stream and river channels in varied settings, approaches used for physical assessments of channel conditions, and quantitative methods to evaluate hydraulic conditions that influence stream and river channel appearance and dynamics. The course will include applications of concepts in fluvial geomorphology in the planning, design and monitoring of stream corridor restoration and management projects. Two one-day weekend field trips may be scheduled during the semester.

**Prerequisites:** ERS 350 or ERS 588 or instructor permission

**Course Typically Offered:** Fall

Credits: 3

### **ERS 491 - Introduction to Meteorology and Climatology**

The climatic system, survey of atmospheric behavior and climatic change; meteorological measurements and analysis;

formulation of physical principles governing weather and climate with selected applications to small and large scale phenomena. (ERS 491 and ERS 591 are identical courses.)

**Prerequisites:** MAT 126 and PHY 112 or PHY 122 or permission

**Course Typically Offered:** Fall, Even Years

Credits: 3

### **ERS 498 - Undergraduate Thesis**

Original research in geological sciences. The research problem must be identified prior to the start of the senior year and may be of an experimental, empirical or theoretical approach. A committee of three or more faculty will supervise the thesis and its defense.

**Prerequisites:** Senior standing.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **ERS 499 - Field Experience in Earth and Climate Sciences**

Students will attend a four- to six-week earth or climate science field camp or engage in equivalent field-based research activities. The experience (a) draws together the various threads of the School's undergraduate program, (b) typifies the work of professionals within Earth and Climate Sciences, (c) develops problem-solving skills while working within a natural system, and (d) develops spatial cognition and reasoning.

**General Education Requirements:** Satisfies the General Education Capstone Experience Requirement.

**Prerequisites:** Senior standing and permission

**Course Typically Offered:** Spring and Summer

Credits: 4-6

### **ESC 316 - Teaching Science in the Elementary School (K-8)**

Presents information and activities designed to encourage students to learn and develop goals and objectives, instructional strategies, selection of curriculum materials K-8, effective management and evaluation techniques.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** Elementary Education majors; EHD 203 and EHD 204.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **ESC 452 - Teaching Science in the Secondary School**

Instructional strategies and general approaches to teaching science in grades 7-12. Emphasis on professional literature, curriculum development, teaching and learning styles and reflective teaching.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** EHD 204 and EHD 221.

**Course Typically Offered:** Fall

Credits: 3

### **ESS 315 - Teaching Social Studies in the Elementary School**

Examines methods and materials for social studies in the elementary school and ways of relating the work of the social studies class to an understanding of practical problems of the community.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition Requirement.

**Prerequisites:** Elementary Education majors.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **ESS 441 - Teaching Social Studies in the Secondary School**

Covers current practices in teaching social studies, selection and use of instructional materials, modern trends in curriculum construction for social studies in the secondary school.

**Prerequisites:** Secondary Education majors.

**Course Typically Offered:** Fall

Credits: 3

## **FAS 101 - Introduction to Franco American Studies**

Introduces students to the French cultures of the United States, emphasizing the peoples of Maine and the Northeast region. Examines European origins and later migrations, the impact of gender and class, the social significance of language, individual and collective expression, the effects of assimilation and the challenges faced today. Taught in English; no knowledge of the French language is presumed.

**General Education Requirements:** Satisfies the General Education Social Context and Institutions and Cultural Diversity and International Perspectives Requirements.

**Course Typically Offered:** Fall

Credits: 3

## **FAS 120 - People, Places and Pasts**

Introduces the cultural geography of Franco America. Investigates how heritage links to place with particular emphasis on gender, class, and ethnicity. Includes a field trip to a Franco American community. Run as a seminar, with no prerequisites or knowledge of French or the Franco American community required.

**General Education Requirements:** Satisfies the General Education Population and the Environment Requirement.

**Course Typically Offered:** Spring

Credits: 3

## **FAS 200 - Primary Sources in Franco American Studies**

This service-learning course prepares students to build print or digital information resources using primary source materials in Franco American Studies. Course readings introduce students to theories and methods of archival practice, and to ethical issues surrounding the creation and use of human records. Students engage these issues in the context of Franco American writing and scholarship, and consider the ways archives and archival materials impact an exploration of Franco American cultural identity. FAS 101 is recommended but not required.

**Course Typically Offered:** Fall and Summer

Credits: 3

## **FAS 230 - Franco American Women's Experience**

Examines the immigration experience and subsequent lifestyles of the present-day Franco American woman and her cultural ancestors. Studying the immigration of these women from France to New France, Canada and across the border into the U.S.,

class participants will learn about the historical and cultural implications of immigration for these women and the definition they imparted to the culture. (This course is identical to WST 235.)

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** FAS 101, WST 101 or permission.

**Course Typically Offered:** Variable

Credits: 3

### **FAS 240 - French Exploration and Settlement of Maine, 1604-1760**

The names and traces of the early French explorers and settlers remain on in many place names along the Maine Coast, including the names of mountains and hiking trails in Acadia National Park, such as Champlain, St. Sauveur, Sieur de Mons, etc. This course examines the history of the French exploration and settlement of Maine and places the French settlement of Maine in the broader geopolitical context of the settlement of North America.

**General Education Requirements:** Satisfies the General Education Population and the Environment Requirement.

**Course Typically Offered:** Fall

Credits: 3

### **FAS 250 - Exile, Migrations and Communities**

This course explores the impact and implications of exile and migration with a focus on Acadian peoples. It begins with a study of the tragic Deportation of the Acadians from their homelands beginning in 1755 and their patterns of exile and migrations. We look at the strategies Acadians have used to maintain cultural survival first as exiles and then as minorities in Louisiana, in the Maritimes, and in Northern Maine. Our themes include but are not limited to: the Catholic Church, education in French, the role of literature and the arts, political awakenings, women in Acadian society, the sense of place and connection to historical homeland, and the various elements of Acadian identity that transcend current geopolitical borders.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Course Typically Offered:** Spring

Credits: 3

### **FAS 270 - Immigration, Yesterday and Today**

This course will use French Canadian immigration to the United States to explore key issues in today's debates about



immigration. We will look at the similarities and differences between the two great waves of immigration, focusing on three key areas at the core of migration debates: rights, citizenship, and migration policy; the second generation; diasporas and transnationalism.

**General Education Requirements:** Satisfies the General Education Ethics and Writing Intensive Requirements.

**Course Typically Offered:** Spring

Credits: 3

### **FAS 329 - Topics in Franco American Studies**

Focuses on themes and issues drawn from, or related to, the history, traditions, and contemporary experience of the Franco American community of Maine and the northeast region.

**Prerequisites:** FAS 101 or permission.

**Course Typically Offered:** Variable

Credits: 3

### **FAS 442 - French Language of North America**

A historical, linguistic and socio-linguistic approach to the study of the Franco-Quebec and the Franco American languages. Emphasis on the morphology, syntax, vocabulary and phonetic system in order to understand the present status of the languages. Research in the areas of the spoken and written language. Taught in French. (This course is identical to FRE 442.)

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** FRE 309 or FRE 310 or permission.

Credits: 3

### **FAS 459 - Colonial Canada**

Studies Canada's history from New France to 1850, emphasizing political, social and economic developments and relations with the American people. (This course is identical to HTY 459.)

**Prerequisites:** HTY 103 or permission.

**Course Typically Offered:** Fall

Credits: 3

## **FND 101 - Foundations First Year Seminar**

Foundations First Year Seminar is a two credit, graded seminar for students in Foundations Program only. It is designed to introduce students to the University of Maine's resources, strategies for achieving academic success, and career exploration. Activities designed to foster exploration and evaluation of interests, goals and abilities and their relationship to potential majors and careers are a major component of the course.

**Prerequisites:** Permission.

**Course Typically Offered:** Fall and Spring

Credits: 2

## **FRE 101 - Elementary French I**

A systematic study of the basics of the French language. Equal emphasis is placed on developing reading, comprehension, speaking and writing skills. For students with no previous study of French or fewer than two years in high school.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Course Typically Offered:** Fall & Summer

Credits: 3 - 4

## **FRE 102 - Elementary French II**

Continued study of the basics of the French language with equal emphasis on developing reading, comprehension, speaking and writing skills. For students with no previous study of French or fewer than two years in high school.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** FRE 101 or equivalent.

**Course Typically Offered:** Spring

Credits: 3 - 4

## **FRE 117 - Accelerated French I**

An intensive, systematic study of the French language at the beginning level that provides the equivalent of two semesters of beginning French (FRE 101 and 102). For students with no previous study of French or fewer than two years in high school.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Course Typically Offered:** Fall

Credits: 6

### **FRE 201 - Intermediate French I**

An integrated approach. Reading texts of a literary and/or cultural nature, and audio-visual materials will be employed to strengthen reading, writing and especially speaking and comprehension skills. Includes a systematic but gradual review of the essentials of French grammar.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** FRE 102 or equivalent.

**Course Typically Offered:** Fall

Credits: 3 - 4

### **FRE 202 - Intermediate French II**

A continuation of FRE 201. Designed to strengthen reading, writing, speaking and comprehension skills.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** FRE 201 or equivalent.

**Course Typically Offered:** Spring

Credits: 3 - 4

### **FRE 218 - Accelerated French II**

A continuation of FRE 117 - Accelerated French I. A multi-media, intensive study of French language and culture that develops speaking, reading, writing, and listening skills. Equivalent to two semesters of intermediate French (FRE 201 and 202).

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** FRE 117.

**Course Typically Offered:** Spring

Credits: 6

## **FRE 305 - French Conversation and Composition I**

Systematic training in the correct usage of spoken and written French through a broad range of conversational situations and writing topics.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives and Writing Intensive Requirements.

**Prerequisites:** FRE 202 or equivalent.

**Course Typically Offered:** Fall

Credits: 3

## **FRE 306 - French Conversation and Composition II**

Continued training in the correct usage of spoken and written French.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives and Writing Intensive Requirements.

**Prerequisites:** FRE 305 or equivalent.

**Course Typically Offered:** Spring

Credits: 3

## **FRE 307 - French for Business**

For students of business, international affairs or related careers. Focuses on the development of vocabulary and the improvement of oral proficiency in business and social settings applied to various francophone settings. Applies technology to education by basing itself on a video textbook and requiring regular use of the Internet as a source of reading and information.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** FRE 202 or equivalent.

**Course Typically Offered:** Variable

Credits: 3

### **FRE 309 - Readings in French Literature**

Practice in reading French. Also prepares students for literature and civilization courses at the 400 level. Discussion in French.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** FRE 202 or equivalent.

**Course Typically Offered:** Fall, Odd Years

Credits: 3

### **FRE 310 - Readings in Francophone Literature**

Practice in reading and discussion in French with an emphasis on the French-speaking world beyond France.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** FRE 305 or equivalent.

**Course Typically Offered:** Fall, Even Years

Credits: 3

### **FRE 315 - Advanced French Conversation**

Oral practice for the advanced language student. Course work revolves around the discussion of cultural and intellectual issues, as well as current political and social events, with a view toward increasing idiomatic and abstract vocabulary.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** FRE 305 or equivalent.

**Course Typically Offered:** Spring, Even Years

Credits: 3

### **FRE 320 - French Pronunciation**

A formal study of the French sound system with considerable practice in phonetic transcription. Practical and remedial work in pronunciation.

**Prerequisites:** FRE 202 or equivalent.

**Course Typically Offered:** Variable

Credits: 3

### **FRE 350 - Multidisciplinary Readings in French**

Intended to be taken in conjunction with a course from another department, this course supplements the content areas of the course to which it is attached and promotes increased proficiency in French through reading and discussion in French. May be repeated for credit.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** FRE 202 or permission.

**Course Typically Offered:** Variable

Credits: 1

### **FRE 390 - Topics in French**

May include the study of literature, culture, cinema, the arts and media as expressed in Francophone countries. Topics vary. May be repeated for credit.

**Prerequisites:** FRE 202 or equivalent.

**Course Typically Offered:** Variable

Credits: 1-3

### **FRE 397 - French (May Term)**

Total immersion program. May be repeated for credit.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** FRE 202 or permission of instructor

**Course Typically Offered:** Summer, Odd Years

Credits: 3

### **FRE 398 - French Immersion: Western France**

A two-week total immersion program offered in Western France. May be repeated for credit.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** FRE 205 or equivalent.

**Course Typically Offered:** Summer, Even Years

Credits: 3

### **FRE 400 - Advanced French Grammar**

An exposition of grammatical and syntactical principles through conceptual presentations along with demonstrations and practice through exercises. Designed to enhance French language competency. This course may be offered online.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** FRE 305 or FRE 306 or permission.

**Course Typically Offered:** Fall

Credits: 3

### **FRE 401 - Translation and Comparative Stylistics**

An exposition of the principles of translation and comparative stylistics with practice via exercises and the translation of texts in both English and French.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives and Writing Intensive Requirements.

**Prerequisites:** FRE 400 or permission.

**Course Typically Offered:** Spring, Even Years

Credits: 3

### **FRE 406 - Eighteenth Century French Literature**

Readings from the works of Montesquieu, Voltaire, Rousseau, Diderot, etc., with special attention to Enlightenment thought and to the novel genre.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** FRE 309 or FRE 310 or permission of instructor.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **FRE 407 - 19th Century French Literature**

Readings of major 19th century figures, including Chateaubriand, Hugo, Flaubert, Zola, Balzac, Stendhal, Sand, and Baudelaire, with particular attention to social and philosophical themes as well as concepts of language.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** FRE 309 or FRE 310 or permission of instructor.

**Course Typically Offered:** Variable

Credits: 3

### **FRE 408 - Twentieth Century French Literature**

Readings in the novel, poetry or drama (content varies.) May be repeated for credit, with permission of instructor.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.



**Prerequisites:** FRE 309 or FRE 310 or permission of instructor.

**Course Typically Offered:** Variable

Credits: 3

### **FRE 413 - Advanced Composition and Stylistics**

An exposition of the fundamentals of French stylistics with practice of these principles via compositions and exercises. Designed to enhance competence in written idiomatic French.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives and Writing Intensive Requirements.

**Prerequisites:** FRE 400 or permission.

**Course Typically Offered:** Spring, Odd Years

Credits: 3

### **FRE 430 - French Film Survey**

A survey of French cinema from its origins to the present, with an emphasis on understanding film as a narrative form.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives and Artistic and Creative Expression Requirements.

**Prerequisites:** FRE 309 or FRE 310 or permission.

**Course Typically Offered:** Variable

Credits: 3

### **FRE 442 - French Language of North America**

A historical, linguistic and socio-linguistic approach to the study of the Franco-Quebec and the Franco-American languages. Emphasis on the morphology, syntax, vocabulary and phonetic system in order to understand the present status of the languages. Research in the areas of the spoken and written language. (This course is identical to FAS 442.)

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** FRE 309 or FRE 310 or permission.

Credits: 3

### **FRE 463 - Quebec Poetry**

A survey of Quebec poetry from the 19th century to the present, focusing on language, theme, socio-historical and political context, ideology and Quebec identity.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition, Cultural Diversity and International Perspectives and Artistic and Creative Expression Requirements.

**Prerequisites:** FRE 309 or FRE 310 or permission.

**Course Typically Offered:** Variable

Credits: 3

### **FRE 464 - Quebec Theatre**

A survey of Quebec from the 1940's to the present, focusing on language, theme, character, theatricality, socio-historical and political context, ideology and Quebec identity.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition, Cultural Diversity and International Perspectives and Artistic and Creative Expression Requirements.

**Prerequisites:** FRE 309 or FRE 310 or permission.

**Course Typically Offered:** Variable

Credits: 3

### **FRE 465 - North American French Novel**

A survey of francophone novels written in North America in the 19th and 20th centuries, focusing on the history and cultural identity of Acadia, Quebec, and New England's Franco Americans.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** FRE 309 or FRE 310 or permission.

**Course Typically Offered:** Variable

Credits: 3

## **FRE 490 - Advanced Topics in French**

Advanced Topics in French and French-Canadian literature or linguistics may include: contemporary cinema, surrealism, contemporary French thought, modern French critical theory, linguistics, sociolinguistics, semiotics, symbolism, literature of commitment, images of women, women writers. Topics vary. May be repeated for credit.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** FRE 309 or FRE 310 or permission.

**Course Typically Offered:** Variable

Credits: 1-3

## **FRE 495 - Senior Project in French**

Capstone Experience in which majors in French and in International Affairs with a concentration in French, or in Cultures, Languages and the Humanities, apply language skills and knowledge gained from all prior language study. Students work closely with a faculty advisor on an approved project and give a public presentation of the project in French. When taken as a stand-alone course, the coursework will reflect the work of three credit hours, regardless of number of credits taken. When taken in conjunction with another French course at the 400 level, the course will carry no credit and will be graded Pass/Fail only.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives, Western Cultural Tradition and Capstone Experience Requirements.

**Prerequisites:** Senior standing and permission.

**Course Typically Offered:** Fall & Spring

Credits: 0-3

## **FRE 498 - Independent Projects II**

No description available.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Course Typically Offered:** Spring

Credits: 1-3

## **FSN 101 - Introduction to Food and Nutrition**

A survey of food and nutrition principles, including the influence of food patterns on health and physical performance; description of a balanced diet; study of the nutrients, interrelationships, sources, effects of processing and storage, food safety, fads, controversies.

**General Education Requirements:** Satisfies the General Education Applications of Scientific Knowledge Requirement.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

## **FSN 103 - Science of Food Preparation**

Basic food preparation skills. The relationship between structure, composition and nutritive value of foods. Lec 2, Lab 2.

**Prerequisites:** FSN 101, Food Science and Human Nutrition major or permission.

**Course Typically Offered:** Spring

Credits: 4

## **FSN 121 - Brewing with Food Science**

This course is designed to utilize the process of making beer as a model to engage students in thinking about the biology, chemistry and processing aspects of the foods they consume. The course will focus on the process of beer making as well as the ingredients that go into beer and their functions. Other topics will include the history of beer (from world and U.S. perspectives), styles of beer and a beer judge's perspective of beer.

**General Education Requirements:** Satisfies the General Education Application of Scientific Knowledge Requirement.

**Course Typically Offered:** Fall

Credits: 3

## **FSN 202 - Foodservice Management**

An overview of the foodservice industry including quantity food production and service, designing physical facilities and administration of foodservice facilities. Topics covered include food and worker safety, menu planning, purchasing, receiving, storage, production, assembly, distribution, service, facility design and equipment, management functions and financial principles. Lec 3

**Prerequisites:** FSN 103 and MAT 115 or MAT 122

**Course Typically Offered:** Fall

Credits: 3

### **FSN 230 - Nutritional and Medical Terminology**

Fundamentals of vocabulary for nutritionists and other health professionals. Web-based.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1

### **FSN 238 - Applied Food Microbiology and Sanitation**

Microbiology as it applies to the causes and control of food spoilage; issues of food safety and sanitation in food systems. Upon completion of the course, students will be eligible for a Training Achievement Program (TAP) Food Safety certification. The official Certification Examination will be given on campus (Orono) during the week of final exams as scheduled.

**Course Typically Offered:** Spring

Credits: 3

### **FSN 265 - Functional Concepts in Nutrition**

A functional approach to food and nutrition principles, including detailed review of digestion and absorption; the influence of food patterns on health and physical performance; description of a balanced diet; study of the nutrients, interrelationships, sources and health benefits.

**Prerequisites:** FSN 101, BIO 100, BIO 208 and CHY 121 or BMB 207

**Course Typically Offered:** Spring

Credits: 3

### **FSN 270 - World Food and Nutrition**

Investigation of the adequacy of world food supplies, and of the contributions to malnutrition made by poverty, government policies, and population growth.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives and Population and the Environment Requirements.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **FSN 301 - Life Cycle Nutrition**

Principles of nutrition applied to needs of individuals throughout life. Study of relationship among nutrition, growth, development, and aging with emphasis on physical and psychosocial influences on nutritional status. Lec 3.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** Junior Standing and a grade of C- or better in BMB207 or CHY 121; BIO 208 or BIO 200; BMB 208 or CHY 122; and FSN 101.

**Course Typically Offered:** Fall

Credits: 3

### **FSN 305 - Foods Laboratory**

The Foods Laboratory will focus on principles of quantity cooking, recipe modification and standardization, food preservation, and food processing. Course will include field trips during class hours.

**Prerequisites:** FSN 202

**Course Typically Offered:** Fall

Credits: 1

### **FSN 330 - Introduction to Food Science**

Covers general characteristics of raw food materials, principles of food preservation, processing factors which influence quality, packaging, water and waste management and sanitation. Lec 3.

**Prerequisites:** BIO 100 and BMB 207 or CHY 121 or permission.

**Course Typically Offered:** Fall

Credits: 3

### **FSN 340 - Food Processing Laboratory**

An introduction to thermal processing, freezing, dehydration, extrusion and curing as applied to food products in the laboratory.  
Lab 3

**Prerequisites:** None.

**Corequisites:** FSN 330.

**Course Typically Offered:** Fall

Credits: 1

### **FSN 396 - Field Experience in Food Science and Human Nutrition**

An approved program of work experience which contributes to the academic major and for which academic credit is given. Students may work part time or full time for a semester in a job related to their professional career goals. May be taken more than once with departmental approval.  
(Pass/Fail Grade Only.)

**Prerequisites:** junior standing and permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1 - 16

### **FSN 397 - Independent Studies**

Independent studies in specific areas of food management, food science and human nutrition.

**Prerequisites:** permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1-6

### **FSN 401 - Community Nutrition**

Examines human needs and delivery systems within community setting. Focus on designing, implementing, and evaluating nutrition education programs or intervention projects. Field experience. Lec 2, Lab 4. Course will include field trips during class

hours.

**General Education Requirements:** Satisfies the General Education Capstone Experience Requirement.

**Prerequisites:** FSN 410 and a grade of C or better in FSN 301

**Course Typically Offered:** Spring

Credits: 4

### **FSN 410 - Human Nutrition and Metabolism**

Science of human nutrition is studied, stressing body metabolism as integrated with organ function for normal individuals, and requirements for energy and nutrients.

**Prerequisites:** BIO 208 or BIO 200, and a C- or better in BMB 322.

**Course Typically Offered:** Fall

Credits: 3

### **FSN 412 - Medical Nutrition Therapy I**

Develops skills in clinical nutrition assessment, therapeutic diet calculations, and nutrition support. Emerging areas of nutrition in relation to disease prevention and treatment will be discussed.

**Corequisites:** FSN 410

**Course Typically Offered:** Fall

Credits: 2

### **FSN 420 - Medical Nutrition Therapy II**

Metabolic and physiological alterations of disease processes. Modification of normal diets to treat specific diseases. Development of nutrition care plans. Lec 4.

**Prerequisites:** FSN 412 and NUR 303.

**Course Typically Offered:** Spring

Credits: 4



## **FSN 425 - Contemporary Issues in the Food Industry**

A writing intensive and discussion based course on current topics and recent developments affecting the food industry. Includes readings, research, and discussion. Students prepare position papers, a non-technical paper for a lay audience, and a major research paper over the course of the semester.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** FSN 330.

**Course Typically Offered:** Fall

Credits: 1

## **FSN 430 - Counseling and Diet Therapy**

Nutrition counseling theory and techniques including patient interviews and diet education sessions. Calculate diet modifications for different disease states. Develop patient education materials.

**Prerequisites:** FSN 301

**Course Typically Offered:** Spring

Credits: 3

## **FSN 436 - Food Law**

Examination and discussion of federal and state laws and regulations applying to the processing, handling, distribution and serving of food products.

**General Education Requirements:** Satisfies the General Education Ethics Requirement.

**Course Typically Offered:** Spring

Credits: 3

## **FSN 438 - Food Microbiology**

Examines the importance of microorganisms in food processing, spoilage, and preservation; the role of microorganisms in fermentation and production of protein, enzymes, and other products; food as vehicle of infection and intoxication. Lec 3

**Prerequisites:** BMB 300.

**Course Typically Offered:** Fall, Even Years

Credits: 3

### **FSN 439 - Food Microbiology Laboratory**

This course contains a series of experiments to allow students to perform and observe fundamental principles and practices of food microbiology. Students will work in the lab to execute the exact procedure utilized by the USDA/FDA for the detection and enumeration of microorganisms in food.

**Prerequisites:** BMB 305 and Food Science Concentration

**Corequisites:** FSN 438

**Course Typically Offered:** Fall, Even years

Credits: 2

### **FSN 440 - Utilization of Aquatic Food Resources**

Utilization and food quality of wild and farmed aquatic animals including production, chemical/physical properties, nutritional value, post-harvest changes, processing systems, regulatory issues, by-product utilization and food safety. Lec 3.

**Prerequisites:** BIO 100 and CHY 121 or permission.

**Course Typically Offered:** Spring, Odd Years

Credits: 3

### **FSN 450 - Food Biotechnology**

Introduction to methods and tools applied to the production of biotechnology-derived foods and food ingredients. Discussion of food safety, product quality, consumer acceptance, regulatory oversight and ethical issues regarding the use of biotechnology to enhance the food supply. Lec 3.

**Prerequisites:** BIO 100 or permission.

**Course Typically Offered:** Spring, Even Years

Credits: 3

## **FSN 482 - Food Chemistry**

Study of the composition, structure, and properties of foods and chemical changes occurring during processing and utilization. Lec 3.

**Prerequisites:** BMB 322 or CHY 252.

**Course Typically Offered:** Fall, Odd Years

Credits: 3

## **FSN 483 - Food Chemistry Laboratory**

Laboratory exercises covering the principles presented in FSN 482. Lab 3.

**Corequisites:** FSN 482

**Course Typically Offered:** Fall, Odd Years

Credits: 1

## **FSN 485 - Introduction to Food Engineering Principles**

Principles of biological and physical sciences related to food processing systems. General concepts of fluid flow, mass and energy balances, heat transfer, refrigeration, freezing, and psychrometrics. Overview of current practices in food engineering, with specific food industry examples. Course will include field trips during class hours. Course will include field trip during class hours.

**Prerequisites:** FSN 330 and junior standing within the FSN major, or permission.

**Course Typically Offered:** Spring, Odd Years

Credits: 3

## **FSN 486 - Food Engineering Laboratory**

Principles of biological and physical sciences related to food processing systems, concepts of materials and energy balances, thermodynamics, fluid mechanics, and heat transfer, use of engineering principles in design of the processes and equipment for processing and preservation of food products.

**Corequisites:** FSN 485.

**Course Typically Offered:** Spring, odd years

Credits: 1

### **FSN 489 - Senior Project in Food Science and Human Nutrition**

A research project will be conducted under the supervision of a faculty member. Written reports and an oral presentation of results are required.

**Prerequisites:** senior standing and permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: Ar

### **FYS 100 - First-Year Seminar**

Introduction to UMaine resources, academic programs and strategies for achieving academic success and is taught by students' academic advisors. Activities designed to foster exploration and evaluation of interests, goal and abilities and their relationship to potential majors and careers.

**Prerequisites:** permission.

**Course Typically Offered:** Fall & Spring

Credits: 1

### **GEE 100 - Introduction to General Engineering**

An introduction to building study skills, and utilizing information resources and group dynamics.  
(Pass/Fail Grade Only.)

**Prerequisites:** General Engineering first-year student.

**Course Typically Offered:** Not Regularly Offered

Credits: 1

### **GEE 103 - Introduction to Pre-Engineering**

This course is intended for students entering the Explorations Pre-Engineering Program. The course provides an introduction to different engineering programs including Chemical and Bioengineering, Civil and Environmental Engineering, Electrical and Computer Engineering, Engineering Physics, Mechanical Engineering, and Engineering Technology. The course also familiarizes students with building skills in the use of information and University resources.

**Prerequisites:** Must be an Explorations Pre-Engineering student.

**Course Typically Offered:** Fall

Credits: 1

## **GEE 105 - Introduction to Engineering**

An introduction to University life, and the different programs available in the College of Engineering. Emphasis on building skills in the use of information and University resources.

(Pass/Fail Grade Only.)

**Prerequisites:** Engineering Undecided and General Engineering Undecided first semester, first-year student.

**Course Typically Offered:** Fall

Credits: 1

## **GEE 230 - Introduction to Engineering Leadership and Management**

Introduction to principles of leadership and management with applications to the engineering work environment. Topics include: definition of leadership and management, motivation, importance of communication, decision making, team building, self-assessment, professional responsibility and ethics. Guest speakers will emphasize the importance of leadership and management skills to career advancement and the competitiveness of the U.S. economy.

**Course Typically Offered:** Spring

Credits: 1

## **GEE 250 - Sustainable Solutions in the Developing World**

An exploration of the fundamental principles and strategies necessary to implement sustainable service projects in the developing world. Examines the social, cultural and ecological impacts of past humanitarian projects and develops an understanding of their influence on the human population and the environment. Course content will be covered through lecture, discussions, case-studies and peer presentations. Students will apply their skills to develop real-world solutions for the current UMaine Engineers Without Borders (UM-EWB) project.

**General Education Requirements:** Satisfies the General Education Population and the Environment and Cultural Diversity and

International Perspectives Requirements.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **GEE 298 - Introduction to Nanoscale Science and Engineering**

Aims to educate first-year engineering students about nanoscience and nanotechnology and to introduce them to nanoscale research at UMaine, conducted by scientists and engineers, many of whom are affiliated with LASST, the IMB, and other interdisciplinary groups on campus. The course will consist of two hours of guided tutorial and two hours of (companion ) laboratory experiences per week.

**General Education Requirements:** Satisfies the General Education Applications of Scientific Knowledge and Ethics Requirements.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **GEE 398 - Special Topics in Engineering**

Topics will vary from semester to semester.

**Prerequisites:** Permission.

**Course Typically Offered:** Fall & Spring

Credits: Ar

### **GEE 430 - Engineering Leadership and Management Internship**

Interns are placed in an engineering mill/plant, consulting services agency, or supplier business, on a full-time basis for one semester, and develop new skills and a greater understanding of the nature of leadership through their experience.

**Course Typically Offered:** Spring

Credits: 3

### **GEE 486 - Advanced Project Management**

Course covers a wide range of project management topics including project planning, controlling, scheduling, and risk analysis. Through lecture and case studies, students will be prepared to become project management professionals and will learn to bring projects to successful completion. The course also emphasizes the human-relations aspects of project management such as team theory and personnel conflict resolution. Lec 3.

**Prerequisites:** Permission.

**Course Typically Offered:** Spring

Credits: 3

## **GEE 490 - Interdisciplinary Capstone Exploration**

Offers engineering juniors an opportunity to meet with faculty and other students to explore the development of a capstone project involving more than one engineering major. Project ideas will be examined with a focus on establishing teams, project objectives, and authorization to proceed as a capstone project. (Pass/Fail Grade Only.)

**Prerequisites:** Junior or Senior standing.

**Course Typically Offered:** Spring

Credits: 1

## **GEO 100 - World Geography**

Introduces students to the major world cultural regions and their characteristics, development and interaction. It focuses particularly on the relationship between cultural groups and the environment within and between each region. Students will be challenged to acquire factual knowledge of cultural regions necessary for geographic literacy and to critically evaluate explanations of these patterns.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives and Population and the Environment Requirements.

**Course Typically Offered:** Fall & Summer

Credits: 3

## **GEO 212 - Geography of Maine**

This course provides a geographical perspective on the historical development of Maine over the last 500 years. The course begins with European contact in the early 1500s, and then examines the evolution of Maine as a borderland during the colonial period, the American settlement of Maine in the late eighteenth and early nineteenth centuries, the growth of industrial manufacturing and tourism in the late nineteenth and early twentieth centuries, and the de-industrialization and development of a

service economy in Maine today. The course pays particular attention to environmental, cultural, and cross-border issues. (GEO 212 and HTY 212 are identical courses.)

**General Education Requirements:** Satisfies the General Education Population and the Environment Requirement.

**Course Typically Offered:** Variable

Credits: 3

## **GEO 275 - Geography of Globalization**

Examines changing demographic, economic, political, and cultural connections across the globe over the past 500 years; their representation through maps; and our current awareness of the globe and the Earth's environment. (GEO 275 and HTY 275 are identical courses.)

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives and Population and the Environment Requirements.

**Course Typically Offered:** Variable

Credits: 3

## **GEO 311 - Geography of Climate Change**

Introduces students to theories of environmental sustainability transitions and resource use in the context of climate change.

**Prerequisites:** Any ANT or GEO course or permission

**Course Typically Offered:** Variable

Credits: 3

## **GEO 349 - Early Modern North America in Atlantic Perspective**

Reflecting the increasing globalization of modern society, this course employs an Atlantic perspective to understand the international history of early modern North America. Focuses on the geography of the European empires that shaped North America, beginning with the Spanish and the French, and then focusing on the British and the revolt of the American colonies. (GEO 349 and HTY 349 are identical courses.)

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Cultural Diversity and International Perspectives Requirements.

**Course Typically Offered:** Variable



Credits: 3

### **GER 101 - Elementary German I**

The basics of the German language. Emphasis on developing reading, comprehension, speaking and writing skills. For students with no previous study of German or fewer than two years in high school.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Course Typically Offered:** Fall

Credits: 3 - 4

### **GER 102 - Elementary German II**

Continued study of the basics of the German Language. Emphasis on developing reading, comprehension, speaking and writing skills. For students with no previous study of German or fewer than two years in high school.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** GER 101 or equivalent.

**Course Typically Offered:** Spring

Credits: 4

### **GER 121 - Elementary German (Schnelldeutsch)**

A beginning course in the German language for students with no previous study of German or fewer than two years in high school. A full year's work covered in one semester.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspective Requirement.

**Course Typically Offered:** Fall

Credits: 6

### **GER 203 - Intermediate German I**

An integrated approach. Reading texts as well as various audiovisual materials will be employed to strengthen reading, writing and especially speaking and comprehension skills. Includes a systematic but gradual review of the essentials of German grammar.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** GER 102 or GER 121 or equivalent.

**Course Typically Offered:** Fall

Credits: 3

## **GER 204 - Intermediate German II**

A continuation of GER 203. Designed to strengthen reading, writing, speaking and comprehension skills.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** GER 203 or equivalent.

**Course Typically Offered:** Spring

Credits: 3 - 4

## **GER 223 - Intermediate German (Schnelldeutsch)**

An integrated approach employing various materials to strengthen reading, writing, speaking and comprehension skills. Includes a systematic but gradual review of the essentials of German grammar. A full year's work covered in one semester.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** GER 102 or GER 121 or equivalent.

**Course Typically Offered:** Spring

Credits: 6

## **GER 305 - Practical German**

Conversational and composition language course designed to further develop students' comprehension, speaking and writing

skills for everyday use. All classes are conducted in German.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives and Writing Intensive Requirements.

**Prerequisites:** GER 204 or equivalent.

**Course Typically Offered:** Fall

Credits: 3

### **GER 306 - Readings in German Literature I**

An introduction to German literature and culture. Accessible but significant texts from 18th to 20th century.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** GER 204 or GER 223 or equivalent.

**Course Typically Offered:** Spring

Credits: 3

### **GER 307 - German for the Professions**

Students of International Relations, Business, Engineering or related fields with moderate proficiency will gain familiarity with specialized language and conventions in professional situations. Authentic, up-to-date information will require the regular use of the Internet as a source of reading. Audio-visual material will be integrated with cultural awareness training. Multiple types of writing assignments will help students improve written structure. All classes are conducted in German.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions, Cultural Diversity and International Perspectives and Writing Intensive Requirements.

**Prerequisites:** GER 204 or GER 223 or equivalent.

**Course Typically Offered:** Variable

Credits: 3

### **GER 390 - Topics in German**

May include the study of literature, culture, cinema, the arts and media as expressed in German-speaking countries. Topics vary. May be repeated for credit.

**Prerequisites:** GER 204.

Credits: 1-3

## **GER 401 - Major Cultural Periods**

Survey course designed to introduce students to major developments in the cultural history of German-speaking countries through maps, historical information, art, music as well as representative literary and expository texts from the Middle Ages to the Age of Enlightenment (ca. 750 AD to 1785).

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** GER 204 or GER 223 or equivalent.

**Course Typically Offered:** Variable

Credits: 3

## **GER 402 - Contemporary Germany**

A study of modern German civilization and Landeskunde; the political, social and intellectual development of Germany from 1945 to present.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** GER 204 or equivalent.

**Course Typically Offered:** Variable

Credits: 3

## **GER 404 - Translation: Theory and Practice**

Thought and theory behind the process of translation with ample opportunity for analysis and practice. (German-English, English-German.)

**Prerequisites:** GER 204 or equivalent.

**Course Typically Offered:** Variable

Credits: 3

## **GER 413 - German Literature and Culture, 1900 to 1945**

Examines modernist intellectual, artistic, musical and literary traditions during the waning years of the German and Austro-Hungarian empires, World War I, the Weimar Republic and the Nazi-Era. Also determines their relationship to the time period's socio-political developments.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Artistic and Creative Expression Requirements.

**Prerequisites:** GER 306 or permission of instructor.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

## **GER 420 - German Film**

Examines development of German film from its beginnings. Student analyzes various film genres as artistic expression of specific time periods. Critical readings of gender representation and minority perspectives clarify the Nazi legacy and other issues facing multi-cultural post-war Germany, Austria and Switzerland. Film theory and issues of script writing and story board development will be as much part of class discussion as the connections between German exiles in Hollywood and the Central European film industry. Class conducted entirely in German.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Artistic and Creative Expression Requirements.

**Prerequisites:** Any 300-level German course or permission of instructor.

**Course Typically Offered:** Variable

Credits: 3

## **GER 490 - Topics in German**

Specific topics vary from semester to semester. May be repeated for credit.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Course Typically Offered:** Variable

Credits: 1-3

## **GER 495 - Senior Project in German**

Capstone Experience in which majors in German and in International Affairs with a concentration in German apply language skills and knowledge gained from all prior language study. Students work closely with faculty advisor on approved project. Students give public presentation of the project in German. The coursework will reflect the work of three credit hours, irregardless of number of credits taken.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives, Western Cultural Tradition and Capstone Experience Requirements.

**Prerequisites:** Senior standing and permission.

**Course Typically Offered:** Fall & Spring

Credits: 1-3

## **GER 497 - Projects in German I**

Independent study on topics selected by student and instructor.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Course Typically Offered:** Fall

Credits: 1-3

## **GRE 101 - Elementary Greek I**

Fundamentals of the Greek language for students who have had little or no preparation in ancient Greek.

**Prerequisites:** Intermediate language skill in another language or permission of instructor.

**Course Typically Offered:** Not Regularly Offered

Credits: 4

## **GRE 102 - Elementary Greek II**

Fundamentals of the Greek language for students who have had little or no preparation in ancient Greek.

**Prerequisites:** GRE 101 or equivalent and intermediate language skill in another language or permission of instructor .

**Course Typically Offered:** Not Regularly Offered

Credits: 4

## **HBR 101 - Beginning Modern Hebrew**

This course is for students with minimal or no previous knowledge of Modern Hebrew. Student will learn the fundamentals of Hebrew grammar, build a working vocabulary, and learn how to read, write, and engage in basic conversations.

**Course Typically Offered:** Fall

Credits: 3

## **HBR 102 - Beginning Modern Hebrew II**

This course covers more advanced grammar and the reading of selected texts such as short stories and simple news articles. The emphasis will be on reading and listening comprehension, vocabulary enrichment and oral expression.

**Prerequisites:** HBR 101

Credits: 3

## **HON 111 - Civilizations: Past, Present and Future I**

The four courses constituting Civilizations: Past, Present and Future follow a chronological trajectory from earliest recorded times through the present, examining philosophy, history, literature, the arts and natural, physical and social sciences. In particular, by incorporating primary sources, small group discussions and multiple perspectives, these courses explore the way in which civilizations and cultures have been developed and have interacted with others. (Offered in the Fall semester.)

**General Education Requirements:** Completion of any of these courses (HON 111, 112, 211 or 212) satisfies either the General Education Western Cultural Tradition or the Cultural Diversity and International Perspectives requirement. Completion of any two satisfies the Western Cultural Tradition, Cultural Diversity and International Perspectives, and Ethics requirements. Completion of three satisfies the Western Cultural Tradition, Cultural Diversity and International Perspectives, Social Context and Institutions, and Ethics requirements. Completion of all four satisfies the Ethics requirement and all areas of the Human Values and Social Context requirements for 16 of the total 18 credits required in those areas. In addition, HON 211 and HON 212 each are designated Writing Intensive. Successful completion of HON 111 and HON 112 with a grade of C or better in each, satisfies the University's basic composition requirement (ENG 101.)

**Course Typically Offered:** Fall

Credits: 4

## **HON 112 - Civilizations: Past, Present and Future II**

The second course in the Honors Civilizations sequence. (Offered in the Spring semester.)

**Course Typically Offered:** Spring

Credits: 4

## **HON 150 - Genome Discovery I: From Dirt to DNA**

Provides laboratory experience working on a bacteriophage genomics research project. Students will study novel bacteriophage they isolate from the environment. Topics covered include phage biology, bacteria and phage culturing and amplification, DNA isolation, restriction digest analysis, agarose gel electrophoresis, and electron microscopy. (HON 150 and BMB 150 are identical courses.)

**Prerequisites:** Permission

**Course Typically Offered:** Fall

Credits: 3

## **HON 155 - Genome Discovery II: From DNA to Genes**

Provides laboratory experience working on DNA sequence from a bacteriophage isolated during the previous semester. Topics include bioinformatics, genome annotation, open reading frame and RNA identification, BLAST analysis, phylogenetics and submission to a genomic database. In addition students will gain skills in designing and running computational experiments, reading the scientific literature, writing scientific papers, and making oral presentations.  
(HON 155 and BMB 155 are identical courses)

**Prerequisites:** HON 150

**Course Typically Offered:** Spring

Credits: 3

## **HON 170 - Currents and Context**

An opportunity for students to develop and enhance their awareness and understanding of events throughout the region, the country, and the world as well as to improve dialogue about these. In doing so, students will employ up-to-date information sources to explore issues including, but not limited to cultural conflicts; the roles of intergovernmental and nongovernmental organizations (IGOs and NGOs); the three branches of American government; the economy; the environment; and political debates of global, regional, and local concern. May be repeated once for credit.



**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions Requirement.

**Prerequisites:** Enrollment in the Honors College or permission.

**Course Typically Offered:** Fall & Spring

Credits: 1

### **HON 180 - A Cultural Odyssey**

An opportunity for students to extend their cultural education in the context of opportunities available at the University of Maine and in the surrounding area. Various arts events including dance, music, theatre, poetry, and visual art will be explored and analyzed. May be repeated once for credit. Required for all students in the Honors College.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Prerequisites:** Enrollment in the Honors College or permission.

**Course Typically Offered:** Fall & Spring

Credits: 1

### **HON 188 - Cultural Connections**

An opportunity for students to explore cultural opportunities available at the University of Maine and in the surrounding area. Students will attend and react to arts events including dance, music, theatre, poetry, and visual art. Required for all students in the Honors College who do not complete HON 180.

Credits: 0

### **HON 190 - Honors Summer Readings: Basic**

An individually arranged program of readings during the summer. For students wanting to supplement their work in HON 111 and HON 112.

**Prerequisites:** permission.

**Course Typically Offered:** Summer

Credits: 1

### **HON 211 - Civilizations: Past, Present and Future III**

The third course in the Honors Civilizations sequence. (Offered in the Fall semester.)

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Course Typically Offered:** Fall

Credits: 4

### **HON 212 - Civilizations: Past, Present and Future IV**

The fourth course in the Honors Civilizations sequence. (Offered in the Spring semester.)

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Course Typically Offered:** Spring

Credits: 4

### **HON 290 - Honors Summer Readings: Intermediate**

Guided summer readings and reports, individually adapted to the student's program of study. For students wanting to supplement their readings in HON 211 and HON 212.

**Prerequisites:** permission.

**Course Typically Offered:** Summer

Credits: 1

### **HON 308 - Visiting Scholar in Ethics Tutorial**

An opportunity for students, through careful reading, thorough research, and measured discussion to determine the John M. Rezendes Visiting Scholar in Ethics to be brought to campus for the following year. Students in the tutorial will develop and refine criteria for the decision, analyze evidence presented about the candidates, deliberate using those criteria, and correspond and negotiate with viable candidates to determine availability and suitability.

**General Education Requirements:** Satisfies the General Education Ethics Requirement.

**Prerequisites:** Junior standing in Honors College with three first- or second-year Honors courses and permission.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **HON 309 - The Honors Read Tutorial**

An opportunity through careful reading, analytic and synthetic writing and extensive discussion, to select, from among eight texts nominated by the University community, the "Honors Read" for incoming students in the Honors College a year hence. The tutorial will include developing and refining criteria for the decision, analysis and reaction to the texts incorporating those criteria and preparing a summative letter of transmittal to be included with the texts delivered to the incoming students. (Offered in the Spring semester.)

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Prerequisites:** Sophomore or junior standing in Honors College with three first- or second-year Honors courses and permission.

**Course Typically Offered:** Spring

Credits: 3

### **HON 310 - Honors Tutorial**

Small group discussions, under tutorial direction, of important readings in a specific topic or theme. May be repeated for credit with the permission of the dean of The Honors College. (Offered in both Fall and Spring semesters and occasionally in the Summer Session.)

**General Education Requirements:** May satisfy several General Education categories; contact The Honors College for details.

**Prerequisites:** Junior standing in Honors College and at least three of HON 111, HON 112, HON 211 or HON 212.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **HON 349 - Tutorial Alternative Portfolio**

Presentation of materials documenting a pre-approved and completed Tutorial Alternative. Supervised by an Honors College associate and the Dean of the Honors College.  
(Pass/Fail Grade Only.)

**Prerequisites:** Permission.

**Course Typically Offered:** Fall & Spring

Credits: 0

### **HON 350 - Honors Seminar**

Topics in such subject areas as the arts, philosophy, history of science, the study of society, etc. Specific topics vary.

**Prerequisites:** Permission.

**Course Typically Offered:** Spring

Credits: 3

### **HON 391 - Introduction to Thesis Research**

A series of weekly meetings designed to provide prospective Honors thesis writers with the background, resources and understanding necessary to produce quality independent work. Will engage students in investigating previous theses written in The Honors College, discussions with students currently writing theses and faculty advising theses, identifying a thesis advisor, developing an individual thesis topic, increasing information literacy and research skills and producing an annotated bibliography or literature review.

(Pass/Fail Grade Only.)

**Prerequisites:** Junior standing in Honors College.

**Course Typically Offered:** Fall & Spring

Credits: 1

### **HON 396 - Honors Independent Study**

A tutorially conducted study of a topic outside the student's major field. May be repeated once for credit, with permission.

**Prerequisites:** permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1-3

### **HON 397 - Honors Specialized Study**

A tutorially conducted study in the student's major field, usually resulting in the choice of a thesis topic or initiation of thesis research. May be repeated once for credit, with permission.

**Prerequisites:** permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1-3

### **HON 398 - Honors Independent Research**

Tutorially conducted independent research. May be repeated once for credit, with permission.

**Prerequisites:** permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1-3

### **HON 450 - Honors Distinguished Lecture Series**

A series of lectures by a distinguished lecturer or lecturers, involving collateral reading and group discussions.

**Course Typically Offered:** Not Regularly Offered

Credits: 1-3

### **HON 498 - Honors Directed Study**

Tutorially directed research for the senior thesis or project. Required of all four-year students graduating with a degree with Honors. (Offered in both Fall and Spring semesters and occasionally in the Summer Session.)

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **HON 499 - Honors Thesis**

The completion of the senior project begun in HON 498. Required of all four-year students graduating with a degree with

Honors. (Offered in both Fall and Spring semesters and occasionally in the Summer Session.)

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

## **HTY 103 - United States History I**

Examines the historical experience of the American people through the major ideas and forces that have shaped the Republic. Focus on the exploration of America through post-Civil War Reconstruction.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Social Contexts and Institutions Requirements.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

## **HTY 104 - United States History II**

Examines the historical experience of the American people through the major ideas and forces that have shaped the Republic. Focus on the urban-industrial age, liberal political reform, and American world leadership.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Social Contexts and Institutions Requirements.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

## **HTY 105 - History of Ancient and Medieval Europe**

This survey explores the political, economic, social and intellectual developments in Europe from antiquity to 1715, emphasizing those features which help to explain our present-day civilization.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Social Contexts and Institutions Requirements.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

## **HTY 106 - History of Modern Europe**

This class surveys the intellectual, social, economic, and political changes that shaped the development of Europe from 1715 to the present. Topics may include the French and the Industrial Revolutions; nationalism and the emergence of nation states; the rise of Marxism; high imperialism; the two world wars; totalitarian governments of the 20th century; comparative histories of everyday life; and European integration.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Social Contexts and Institutions Requirements.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

## **HTY 107 - East Asian Civilization I**

A survey of China's and Japan's social, economic, cultural and political life from prehistoric times to the present. Whenever applicable, Korea and Vietnam will be discussed. Emphasis on key periods in each country, especially changes in the 19th and 20th centuries.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and Cultural Diversity and International Perspectives Requirements.

**Course Typically Offered:** Fall

Credits: 3

## **HTY 108 - India: Identities and Changes**

A survey of the social, economic, cultural and political life of India from prehistoric times to the present. Key periods, especially since the later half of the 19th century, and main themes will be emphasized.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives and Social Contexts and Institutions Requirements.

**Course Typically Offered:** Spring

Credits: 3

## **HTY 109 - Introduction to Early Latin America**

Explores the creation of dynamic Latin American societies as an unequal combination of Iberian, Indian, and African traditions. Begins with Native American civilizations before the arrival of Europeans and concludes with the national independence movements of the 19th century. The development of the modern world in a non-Anglo tradition is a central course theme.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Cultural Diversity and International Perspectives Requirements.

**Course Typically Offered:** Fall

Credits: 3

### **HTY 110 - Introduction to Modern Latin America**

Second of a two-part survey that introduces students to the major developments in Latin American history. Begins with the struggle for independence in the early nineteenth century and ends with the shift to neoliberalism that occurred in the late twentieth century. Thematically, the course will pay particular attention to the issues liberalism and modernization, and how these ideological currents shaped race, class, and gender relations in Latin America.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Cultural Diversity and International Perspectives Requirements.

**Course Typically Offered:** Variable

Credits: 3

### **HTY 112 - Introduction to Africa**

A survey of Africa's social, economic and political history from 1800 to the present. Emphasis on African and European interaction, pan-Africanist currents, and the national histories of Nigeria, South Africa, Congo and Ghana.

**General Education Requirements:** Satisfies the General education Social Contexts and Institutions and Cultural Diversity and International Perspectives Requirements.

Credits: 3

### **HTY 130 - Craft of Historical Detection**

This course introduces students to the "detective work" involved in historical inquiry using a single case study or historical controversy. (Case study or controversy will vary depending on the instructor). The course is also a "first-year success course" designed to help students develop effective study and academic skills. It can be used by history majors or potential history majors to meet the one credit LAS 150 requirement and also fulfills a history requirement.

Credits: 3



## **HTY 199 - Problems in History**

An analysis of a selected controversial or contemporary historical problem. In some cases the specific topic and methodology may be chosen jointly by interested students and an instructor.

**Course Typically Offered:** Variable

Credits: 3

## **HTY 202 - Medieval Civilization**

Investigation of the cultural development of Europe during the Middle Ages, from late Roman times through the 15th century. Develops a broad overview of the distinctively European civilization that emerged during the period.

**Course Typically Offered:** Spring

Credits: 3

## **HTY 210 - History of Maine**

A survey of Maine's social, economic, and political life, from primitive times to the present. After a brief study of Native American life preceding white settlement, the periods of colonial, provincial, and state history are covered.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Social Contexts and Institutions Requirements.

**Prerequisites:** No-first-year students.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **HTY 211 - Maine and the Sea**

An overview of Maine maritime history from aboriginal uses through the current state of maritime Maine. Emphasis on the coast's history, inland Maine's relationship with the sea, Maine's maritime relationship to the world, and current historical and archaeological research.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition Requirement.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **HTY 212 - Geography of Maine**

This course provides a geographical perspective on the historical development of Maine over the last 500 years. The course begins with European contact in the early 1500s, and then examines the evolution of Maine as a borderland during the colonial period, the American settlement of Maine in the late eighteenth and early nineteenth centuries, the growth of industrial manufacturing and tourism in the late nineteenth and early twentieth centuries, and the de-industrialization and development of a service economy in Maine today. The course pays particular attention to environmental, cultural, and cross-border issues. (GEO 212 and HTY 212 are identical courses.)

**General Education Requirements:** Satisfies the General Education Population and the Environment Requirement.

**Course Typically Offered:** Variable

Credits: 3

## **HTY 213 - History of the Maine Woods**

This course will survey the history of the Maine woods from postglacial times to the present. Topics include alterations in the forest ecology, Native American and colonial settlement, and changing economic, industrial, and recreational uses of the woods. The course will also explore the varieties of spiritual and literary interpretations ascribed to the forest environment.

**General Education Requirements:** Satisfies the Western Cultural Traditions and the Population and Environmental General Education Requirements.

**Prerequisites:** None

**Course Typically Offered:** Alternate years

Credits: 3

## **HTY 218 - History of Film**

Global history of film with emphasis on the cultural, technological, and philosophical sources of film in the 20th century.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Cultural Diversity and International Perspectives Requirements.

**Course Typically Offered:** Variable

Credits: 3

## **HTY 220 - North American Indian History**

An introductory history of North American Indians, from before European contact to the present. Within a broad chronological framework, the course will look at critical themes in American Indian history; American Indians prior to contact; cultural contact; treaty making, treaty rights, sovereignty; impact of government policies on Native populations; and contemporary issues.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and Cultural Diversity and International Perspectives Requirements.

**Course Typically Offered:** Spring

Credits: 3

## **HTY 222 - Maine Indian History in the Twentieth Century**

Too often Native people are relegated to the distant past, leading society to have misunderstandings about indigenous communities today. This course introduces students Wabanaki history of Maine and eastern Canada in the twentieth century. The term "Wabanaki" is an all-inclusive term that refers primarily to Mi'kmaqs, Maliseets, Passamaquoddies, and Penobscots, along with other Abenaki groups. The tribal homeland encompasses present-day northern New England, the Maritime Provinces, and southern Quebec. We will explore the variety of ways Wabanaki experiences deviated from the national narrative on American Indians and examine when Native challenges were in lockstep with western tribes in the twentieth century. This course considers the interplay between cultural traditions and modernity. The regional scope highlights local developments. We will investigate prominent themes of resistance, accommodation, activism, sovereignty, and cultural survival. Wabanaki people were positive actors in their own affairs, not passive pawns subdued by forces beyond their control. This course will provide context to contemporary challenges Wabanaki people confront. As one tribal historian astutely noted, "I can never give up hope, as my ancestors never gave up hope."

HTY 222 and NAS 230 are identical courses.

**General Education Requirements:** Satisfies the General Education Population and Environment and Cultural Diversity or International Perspectives requirements.

**Course Typically Offered:** Fall

Credits: 3

## **HTY 240 - Creation of the Atlantic World, 1450-1888**

This entry-level course uses a comparative transnational perspective to understand the formation of an integrated early modern world in the region connected by the Atlantic Ocean. Selected topics given close attention include the Spanish conquest of the Mexica/Aztec Empire, Native American responses to the invasion of their homelands, religion as a key site of conflict and accommodation among varied cultural groups, the slave trade and the rise of modern plantation slavery, environmental exchanges across the Atlantic, the Age of Democratic Revolutions with an emphasis on Haiti, and the dismantling of slavery in the western hemisphere by 1888.

**General Education Requirements:** Cultural Diversity or International Perspectives and Social Context and Institutions.

**Course Typically Offered:** Fall Even Years

Credits: 3

### **HTY 241 - History of Globalization, 1900-Present**

An introductory history of globalization. Explores the major political, economic, cultural and technological features of the twentieth century that have helped to create today's global society. Emphasizes global changes and their effects on everyday life.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and Cultural Diversity and International Perspectives Requirements.

**Course Typically Offered:** Spring

Credits: 3

### **HTY 251 - Technology and Society from Ancient Times till the Present**

A survey of the history of Western technology and, to a lesser extent, non-Western technology from ancient times till the present. The course covers major developments both "internally" -- as tools and machines" -- and "externally" as related to the societies which have produced them and upon they in turn have had impact. Thus HTY 251 is not an old-fashioned and one-sided "nuts and bolts" course. Instead HTY 251 examines the complex relationship between (1) technological change and (2) social, cultural, economic, and political change as each has affected the other over. Old-fashioned "nuts and bolts" history of technology courses invariably assume that virtually all technological developments constitute "progress" and often make technological "progress" the measure of all things. By contrast, HTY 251 repeatedly asks if that traditional simplistic equation between technological advances and social, cultural, economic, and political advances is accurate or if it might be rethought in various instances over the course of history.

**General Education Requirements:** Satisfies the Western Cultural Tradition Social Context and Institutions General Education Requirements.

Credits: 3

### **HTY 275 - Geography of Globalization**

Examines changing demographic, economic, political, and cultural connections across the globe over the past 500 years; their representation through maps; and our current awareness of the globe and the Earth's environment. (GEO 275 and HTY 275 are identical courses.)

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives and Population and the Environment Requirements.

**Course Typically Offered:** Variable

Credits: 3

### **HTY 278 - American Military History**

America's experience with warfare, from the colonial period through the Vietnam era. How American wars have been fought, and the complex interrelationship between American society and the military, including economic, political and social factors.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Social Contexts and Institutions Requirements.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **HTY 279 - European Military History**

A survey from the 18th Century to the present. Examines the causes and nature of war, the relationship of soldiers and civilians, and war's impact on modern society.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition Requirement.

**Course Typically Offered:** Fall, Even Years

Credits: 3

### **HTY 280 - Naval History**

The history of navies in the modern period (c. 1500 to the present) including use of naval forces in the achievement of national goals, development of naval technology and tactics, effects of naval construction and manning upon society, sociology of navies, comparison of naval policies in various states, the current balance sheet of navies. (This course is identical to NAV 202.)

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Social Contexts and Institutions Requirements.

**Course Typically Offered:** Variable

Credits: 3

### **HTY 311 - Research Seminar**

A writing-intensive research seminar on varying topics designed to give students experience in all aspects of historical research from choosing a topic, through weighing and sifting of evidence, to writing the finished paper. May be repeated once on a different topic.(Offered at least once per academic year.)

**General Education Requirements:** Satisfied the General Education Writing Intensive Requirement

**Course Typically Offered:** Every Year

Credits: 3

### **HTY 312 - Furs, Frontiers, and Fame: North American Exploration**

This course examines the identities, practices, and spaces of exploration in North America from the late fifteenth to the twentieth centuries. Different political, economic, scientific, and cultural motives for the exploration of Canada and the United States over time will be compared and contrasted. The experiences of Spanish, French, English, Russian, American, and Canadian explorers and expeditions will be situated in local, national, imperial, and global contexts. The course will broadly explore the themes of cross-cultural encounter, exploration and science, textual and visual representation, and the public commemoration of explorers and exploration.

**General Education Requirements:** Western Cultural Traditions and Cultural Diversity or International Perspectives.

**Prerequisites:** 6 credits of History courses or instructor permission.

**Course Typically Offered:** Fall

Credits: 3

### **HTY 316 - Shipwreck Sites: Archaeological and Historical Investigations**

The process of a complete shipwreck site investigation, from initial research through publication. (ANT 316 and HTY 316 are identical courses.)

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition requirement.

**Prerequisites:** ANT 317 or permission.

**Course Typically Offered:** Spring, Odd Years

Credits: 3

### **HTY 330 - Robber Barons, Reformers and Radicals 1877-1914**

Traces the transformation of the United States into a modern nation by exploring themes of industrialization, urbanization, immigration, politics, and imperial outreach. Particularly focuses on the contest of power between so-called "Robber Barons", or industrial leaders, and the reformers and radicals who challenged their vision for the nation.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition Requirement.

**Prerequisites:** HTY 103 or HTY 104 or permission.

**Course Typically Offered:** Variable

Credits: 3

### **HTY 332 - Womanhood in America**

Examines the changing experiences of American women from colonial times to the present. Emphasis on what women did and what they were told to do, the experiences of different groups of women, and the ways in which women worked to change their situation.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** First-year students require permission.

**Course Typically Offered:** Fall

Credits: 3

### **HTY 338 - Everyday Life in America, 1600-1850**

Examines the experience of everyday life for ordinary Americans living during the 17th, 18th, and early 19th centuries. In order to explore this everyday world the class will analyze a wide variety of sources including architecture, clothing, decorative arts, folktales, diaries and family history.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Social Contexts and Institutions Requirements.

**Prerequisites:** HTY 103 or permission.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **HTY 341 - The Making of Modern China**

A survey of social, economic, cultural and political development in China from 1600 to the present. Emphasis will be on the 20th century, especially on the Communist Revolution and the "market economy reform" period since 1978.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives and Social Contexts and Institutions Requirements.

**Prerequisites:** HTY 107 or HTY 108 or six hours of history or permission.

**Course Typically Offered:** Variable

Credits: 3

### **HTY 349 - Early Modern North America in Atlantic Perspective**

Reflecting the increasing globalization of modern society, this course employs an Atlantic perspective to understand the international history of early modern North America. Focuses on the geography of the European empires that shaped North America, beginning with the Spanish and the French, and then focusing on the British and the revolt of the American colonies. (GEO 349 and HTY 349 are identical courses.)

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Cultural Diversity and International Perspectives Requirements.

**Course Typically Offered:** Variable

Credits: 3

### **HTY 350 - Nations in Latin America**

Analysis of an individual Latin American nation. Focuses on issues of social stratification, economic development, and/or cultural production of that nation.

**General Education Requirements:** Satisfies the General Education Cultural Diversity Requirement

**Prerequisites:** HTY 109 or HTY 110 or permission

Credits: 3

### **HTY 351 - The Napoleonic Empire (1799-1815)**

Course discusses Napoleon's rule in France and Europe (1799-1815), the formation of the Napoleonic empire, the changes he introduced throughout his empire, and the period's legacy.

**Prerequisites:** One History Course



**Course Typically Offered:** Variable

Credits: 3

### **HTY 398 - Historical Issues**

An exploration of selected contemporary historical issues not covered in existing courses. In some cases the specific topic and methodology may be chosen jointly by interested students and an instructor.

**Prerequisites:** first-year students require permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **HTY 401 - History of Greece**

Ancient Greece from the "Heroic Age" to the "Classical and Hellenistic", including the discovery of rational thought; the development, crisis, and failure of democracy in classical Athens; unification of city-states and creation of a world empire that launched a new era in world history.

**Prerequisites:** HTY 105 or permission.

**Course Typically Offered:** Fall

Credits: 3

### **HTY 402 - Roman History**

The rise of ancient Rome from a small Italian town to mistress of the Mediterranean. Problems of excessive greatness including failure of a city-state republic to rule a vast empire and triumph of Caesarism. Covers the establishment of the "Roman Peace" under the emperors, "Christianization" and problem of the "Decline of Rome".

**Prerequisites:** HTY 105 or permission.

**Course Typically Offered:** Spring

Credits: 3

### **HTY 403 - Early Middle Ages**

Europe from late antiquity to about 950, considering the social, economic, political, and intellectual developments during Merovingian and Carolingian times, emphasizing the early medieval agricultural revolution and reconstructing the factors affecting the lives of ordinary people.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** HTY 105 or permission.

**Course Typically Offered:** Variable

Credits: 3

### **HTY 404 - Late Middle Ages**

Social, economic, political, and intellectual history of Europe from 950 to the Renaissance, focusing on the medieval frontier period and the late medieval era of environmental crisis and economic contraction.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Population and the Environment Requirements.

**Prerequisites:** HTY 105 or permission.

**Course Typically Offered:** Variable

Credits: 3

### **HTY 405 - Early Modern Europe: Renaissance, Reformation and the Foundation of the Modern World-System**

A survey of the cultural, religious, social, economic and political history of Europe from 1300 to the end of the period of religious wars. Emphasis on the cultural rebirth following upon the recovery of the art, literature and philosophy of cultural antiquity; on the Reformation and Counter-Reformation as marking the end of the "closed," relatively homogenous world of Medieval Christendom and an entrance into a more open universe of spiritual and intellectual possibilities; and on the economic, social and technological transformations that made possible and were in turn accelerated by the expansion of European societies into Africa, Asia and the Americas.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives, Western Cultural Tradition and Writing Intensive Requirements

**Prerequisites:** HTY 105.

**Course Typically Offered:** Variable

Credits: 3

## **HTY 407 - The Age of Monarchs and Revolution: Europe, 1648-1815**

Covers the later part of Early Modern European history and the early years of modern Europe: 1648-1815. Discusses the concepts and significant social and political events and issues, such as absolutist monarchies, feudalism, nobility, the Church, peasantry, the Enlightenment, nationalism, liberalism, the French Revolution, and the Napoleonic Empire.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition Requirement.

**Prerequisites:** HTY 105 or HTY 106 or permission.

**Course Typically Offered:** Fall

Credits: 3

## **HTY 408 - 19th Century Europe, 1815-1914**

Europe from the Congress of Vienna to World War I: industrialization, the emergence of modern ideologies, German and Italian unification, the rise of democracy, imperialism and the road to World War I.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** HTY 106 or permission.

**Course Typically Offered:** Spring

Credits: 3

## **HTY 409 - Twentieth Century Europe I, 1914-1945**

Europe in the age of the two world wars, focusing on the causes and consequences of the wars themselves, concurrent political and economic problems, the challenge of totalitarianism, and the intellectual and cultural contexts.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition Requirement.

**Prerequisites:** HTY 105 or HTY 106 or permission.

**Course Typically Offered:** Fall

Credits: 3

## **HTY 410 - 20th Century Europe II, Since 1945**

Europe in the age of Cold War division, focusing on the contrasting development of prosperous democracies in western Europe and the Soviet imperium in eastern Europe, culminating in the overcoming of this division and this imperium in the revolutions of 1989/1991.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** HTY 106 or permission.

**Course Typically Offered:** Spring

Credits: 3

## **HTY 411 - The Holocaust**

The Nazi persecution and extermination of European Jews (1933-1945) including the exploration of modern anti-Semitism, Nazi ideology, the persecution of German Jews after 1933, and the extermination of six million European Jews in Nazi occupied Europe during the Second World War.

**General Education Requirements:** Satisfies the Western Cultural Tradition and the Cultural Diversity and International Perspectives General Education Requirement.

**Prerequisites:** HTY 105 or HTY 106

Credits: 3

## **HTY 415 - African-American History**

Examines the African-American experience both thematically and chronologically, from slavery to emancipation, and the lives of African-Americans in the twentieth century. Includes African survivals and slave culture; the impact of racism, religion, and family on African-American lives; efforts by blacks to improve their lives; and the meaning of their history for contemporary African-Americans.

**Prerequisites:** HTY 103 or HTY 104 or permission.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

## **HTY 416 - The American South**

The American South is part of the United States, yet its history and traditions are very different from those of the rest of the country. Considers the separate history of the American South, addressing such issues as slavery, the South's failed war for independence, race relations, the New South, and the civil rights movement. Examines images and stereotypes of the South in popular culture and the question of southern distinctiveness, in order to assess the place of the South in the nation.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** HTY 103 or HTY 104 or permission.

**Course Typically Offered:** Spring

Credits: 3

### **HTY 420 - Science and Society Since 1800**

Examines the development of science, with emphasis on America, since the Scientific Revolution, both 'internally'--as ideas and experiments--and 'externally'--as related to America and other societies that have produced them and upon which they in turn have had impact.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition Requirement.

**Prerequisites:** Not open to first-year students.

**Course Typically Offered:** Variable

Credits: 3

### **HTY 423 - History of Russia I**

Russian history from the earliest times to the 1870's, including political, economic, cultural and social developments during the Kievan, Tartar, Muscovite and Imperial periods.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** HTY 105 or HTY 106 or permission.

**Course Typically Offered:** Fall, Odd Years

Credits: 3

### **HTY 424 - History of Russia II: The Russian Revolution, 1881-1991**

The history of the Russian Empire and the Soviet Union during the last 125 years, including the problems and achievements of Imperial Russia, World War I and the Bolshevik seizure of power, the development of Communist totalitarianism, Russia as a world power, and contemporary dilemmas.

**General Education Requirements:** Satisfies the General Education Ethics and Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** HTY 106 or permission.

**Course Typically Offered:** Spring, Even Years

Credits: 3

### **HTY 426 - History of Modern Germany**

Includes major political, economic, cultural, and social developments during the Imperial, Weimar, National Socialist, and Federal Republic eras.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** HTY 106 or permission.

**Course Typically Offered:** Fall, Even Years

Credits: 3

### **HTY 429 - History of Modern Italy**

Covers the economic, social, political, and cultural developments of the Italian people from 1796 to the present. Explores Italian unification, Fascism, and the Italian migration to the U.S.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition Requirement.

**Prerequisites:** Six hours of history or permission.

**Course Typically Offered:** Variable

Credits: 3

### **HTY 432 - History of Modern Ideas**

This is a survey of some of the major currents of modern intellectual history. In the nineteenth century, Europe was filled with

presumptions of its own ascendancy and world-superiority. These ideas were largely justified through an interpretation of history. This course will begin by looking at the dominant place of history in the nineteenth century and, in particular, its relation to God, nature, and the nation. It then turns to some of the grave doubts that emerged over Europe and its modes of thought. The twentieth century can be interpreted as a disintegration of meaning and understanding, and this course will assess various attempts to describe this crisis, including endeavors to find a new basis for coherent meaning. Such endeavors continue to the present, where this course concludes. Attention to the history of art will supplement the discussion of texts.

**Prerequisites:** Junior, Senior, or Graduate standing.

**Course Typically Offered:** Spring

Credits: 3

### **HTY 433 - Greek and Roman Mythology**

The study of classical myths as the poetic expression of the Greek and Roman spirit, as the depiction of everything considered sacred, and as the embodiment of the basic patterns of the human psyche. Discusses the major theories of myth. Uses modern psychology and anthropology to show how the myths reveal secrets of our emotional, intellectual, and spiritual lives.

**Prerequisites:** GRE 101 or LAT 101 or PHI 101 or permission.

**Course Typically Offered:** Variable

Credits: 3

### **HTY 434 - Greek and Roman Heritage in America**

The influence of Greek and Roman thought on North American culture from the colonial period to the 20th century. Prime examples: the idea of a Classical Republic, Greek architecture, pro- and anti- slavery arguments based on Plato and Aristotle.

**Prerequisites:** one of the following: ARH 251, ARH 253; GRE 101, GRE 102; HTY 106; LAT 101, LAT 102, PHI 101; POS 301 or permission.

**Course Typically Offered:** Variable

Credits: 3

### **HTY 437 - History of Modern Japan**

Survey of social, economic, cultural and political development in Japan from the last period of feudalism to the present day. Social and political structures, value changes, the rise of militarism and fascism, the effects of the Pacific War, popular movements, modernization problems and progress, and relations with the United States and the rest of the world will be discussed.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives and Social Contexts and Institutions Requirements.

**Prerequisites:** HTY 107 or HTY 108 or six hours of history or permission.

**Course Typically Offered:** Variable

Credits: 3

### **HTY 442 - The United States and Vietnam: A History**

Focuses on key periods in the historical development of the United States and Vietnam and trace the history of their relations since the beginning of World War II. The economic, social, political, ideological, and cultural origins of the conflict, the conduct of the war and the aftermath in Vietnam, East Asia, and the United States will be examined.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives and Social Contexts and Institutions Requirements.

**Prerequisites:** HTY 103 or HTY 104 or HTY 107 or HTY 108 or permission.

**Course Typically Offered:** Fall

Credits: 3

### **HTY 446 - History of Modern Middle East, 1800-Present**

The economic, social, and political transformations experienced by the Middle East in the nineteenth and twentieth centuries. Focus on the rise of Arab nationalism and the Israeli-Arab conflict.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** One 100 or 200 level HTY Course.

**Course Typically Offered:** Fall and Summer

Credits: 3

### **HTY 449 - History of South Africa**

Examines the political, economic, and social history of South Africa from 1652 to the present. Emphasis on race relations from the establishment of the Cape Colony to the fall of Apartheid. Explores European colonization, the formation of the Zulu Empire, the South African War, and the birth of the New South Africa.



**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** HTY 106 or HTY 112 or permission.

**Course Typically Offered:** Alternate Years

Credits: 3

## **HTY 450 - History of the British Empire**

Examines the history of the British Empire from the late 15th century to the end of the 20th century. Emphasis on the 19th century, especially the period of rapid growth c. 1875-1914, in Africa and Asia.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** HTY 105 or HTY 106 or permission.

**Course Typically Offered:** Alternate Years

Credits: 3

## **HTY 453 - History of Ireland I**

The history of Ireland from ancient beginnings through the seventeenth century, examines prehistoric culture, the coming of Christianity, and the English conquests of Ireland.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** HTY 105 or HTY 106 or six hours of History.

**Course Typically Offered:** Spring

Credits: 3

## **HTY 454 - History of Ireland II**

The history of Ireland from the late seventeenth through twentieth centuries, examines nationalist movements, the land question, and the development and issues of Northern Ireland.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** HTY 105 or HTY 106 or six hours of history.

**Course Typically Offered:** Fall

Credits: 3

### **HTY 455 - History of Great Britain I**

The political, socio-economic, and constitutional aspects of British history from Roman Britain to 1700, emphasizing economic growth and the development of political institutions.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition Requirement.

**Prerequisites:** HTY 105 or HTY 106 or six hours of history.

**Course Typically Offered:** Fall

Credits: 3

### **HTY 456 - History of Modern Britain**

The political, socio-economic, and constitutional aspects of British history from 1700 to the present, emphasizing economic growth and the development of democracy.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition Requirement.

**Prerequisites:** HTY 105 or HTY 106 or six hours of history.

**Course Typically Offered:** Alternate Years

Credits: 3

### **HTY 459 - Colonial Canada**

Canada's history from New France to 1850, emphasizing political, social, and economic developments and relations with the American people. (This course is identical to FAS 459.)

**Prerequisites:** HTY 103 or permission.

**Course Typically Offered:** Fall

Credits: 3

## **HTY 460 - Modern Canada**

Canada's history from Confederation to the present, emphasizing political, social, and economic developments and Canada's relations with the United States.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives and Ethics Requirements.

**Prerequisites:** HTY 104 or permission.

**Course Typically Offered:** Variable

Credits: 3

## **HTY 461 - Colonial British America to 1763**

Examines the founding and development of English-speaking colonies in the New World. Themes include the trans-Atlantic context of colonization, Native Americans, the growth of slavery, and religious and regional variation in colonial America.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Writing Intensive Requirements.

**Prerequisites:** HTY 103 or permission.

**Course Typically Offered:** Variable

Credits: 3

## **HTY 462 - The American Revolution**

Explores the pivotal era that created the United States as an independent nation in the late 18th and early 19th centuries. In addition to a traditional focus on the Revolutionary War and the Federal Constitution, the course also considers conflict within patriot ranks as well as the experience of people who did not necessarily benefit from the Revolution.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Social Contexts and Institutions Requirements.

**Prerequisites:** HTY 103 or permission.

**Course Typically Offered:** Variable

Credits: 3

## **HTY 464 - America at the Crossroads: The Era of Civil War Reconstruction 1840-1876**

Problems and processes involved in territorial expansion, economic growth, the slavery issue, civil war, and the reconstruction of American society.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition Requirement.

**Prerequisites:** HTY 103 or permission.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

## **HTY 465 - American Landscapes, 1600-1850**

Investigates the shaping of American landscapes and interpretation of those landscapes in history, fiction and art. In particular, the course explores the ways in which Americans used idealizations of the physical environment to define certain cultural attributes and to explain social transformations.

**General Education Requirements:** Satisfies the General Education Population and Environment Requirement.

**Prerequisites:** HTY 103 or permission

**Course Typically Offered:** Not Regularly Offered

Credits: 3

## **HTY 467 - Early 20th Century America, 1914-1945**

Changes in American politics, economics, society, and culture including the Wilson era of reform and intervention in World War I, the age of business, depression and the New Deal of FDR, World War II and American global power.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition Requirement.

**Prerequisites:** HTY 104 or permission.

**Course Typically Offered:** Fall

Credits: 3

## **HTY 468 - America Since 1945**

Changes in American politics, economics, society, and culture including the Cold War and McCarthyism, protest movements of the 1960s, Watergate, the energy crisis and economic recession, affluence and poverty in the 1980s.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition Requirement.

**Prerequisites:** HTY 104 or permission.

**Course Typically Offered:** Spring

Credits: 3

### **HTY 473 - History of U.S. Foreign Relations I**

U.S. foreign relations from the Revolution to World War I. Explores the role of government and private individuals and groups (pioneers, businesspeople, missionaries) in shaping U.S. interactions with other societies and nations as it expanded across the North American continent and evolved into a world power. Includes critical examinations of U.S. foreign relations by Indian, Latin American, Asian and European nations, and by internal dissenters.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** HTY 103 or HTY 104 or permission.

**Course Typically Offered:** Fall

Credits: 3

### **HTY 474 - History of U.S. Foreign Relations II**

Explores the role of the U.S. in international affairs from 1914 to the present. Considers formal U.S. diplomacy and military activities and role of private individuals and groups such as businesspeople, labor and peace activists, and peddlers of American cultural products (movies, jeans, etc.) in shaping U.S. interactions with other nations. Includes critical examinations of U.S. foreign relations by other nations and by internal dissenters.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** HTY 103 or HTY 104 or permission.

**Course Typically Offered:** Variable

Credits: 3

### **HTY 477 - The American Worker**

Examines changes in the world of work during successive phases of capitalist development since the Revolutionary War. Focus on skilled and unskilled labor; the evolving factory system; public policies and effects of technological change; ethnicity, race, and gender on worker responses. Assesses contemporary workplace issues from an historical perspective.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition, Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** HTY 103 or HTY 104 or permission.

**Course Typically Offered:** Variable

Credits: 3

### **HTY 479 - U.S. Environmental History**

The attitudes, policies, and behavior of Americans and their government toward the environment. Current issues evolving out of past attitudes and policies.

**General Education Requirements:** Satisfies the General Education Ethics and Population and the Environment Requirements.

**Prerequisites:** 6 hours of history or permission.

**Course Typically Offered:** Fall

Credits: 3

### **HTY 481 - Amerindians of the Northeast: A History**

Considers Amerindian history from a regional perspective, with emphasis on intersocietal and interethnic relations between the 16th and 19th centuries. It encompasses the Algonquian and Iroquoian speaking peoples from the Atlantic seaboard to the upper Great Lakes and from the Ohio Valley to the Hudson Bay.

**Course Typically Offered:** Variable

Credits: 3

### **HTY 483 - Violence in North American History**

Focuses on collective or group violence in the United States and Canada from the colonial era to the present. Familiarizes students with violent episodes that have shaped the histories of both countries and uses these examples as a theoretical device for comparing and contrasting nationalistic ideals and myths in the United States and Canada.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Cultural Diversity and

International Perspectives Requirements.

**Prerequisites:** 6 hours of history or permission.

**Course Typically Offered:** Alternate Years

Credits: 3

### **HTY 484 - History of Jazz**

The origin and development of the improvised American form of music popularly known as Jazz. Special emphasis is placed on African-American culture in its broader historical context; how this led to the development of the music, its social as well as artistic significance; study and analysis of the various Jazz styles, through exposure to the music; especially to the recorded performances of its major innovators.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives & Artistic and Creative Expression Requirements.

**Prerequisites:** Sophomore standing, or permission.

**Course Typically Offered:** Spring

Credits: 3

### **HTY 487 - The First World War**

The course examines the history of World War I (1914-1918). It investigates a struggle that tore Europe apart, helped to re-order world politics, and accounted for the death of millions. Students will gain a fundamental understanding of the reasons for the war's outbreak; explore different dimensions of the experience of war (including both combat and the home front); examine civil-military relations and the development of the welfare state; and, analyze the peace treaties as well as the efforts of survivors of the war to remember the dead and come to terms with their losses.

**General Education Requirements:** Satisfies the General Education Western Cultural Traditions and Cultural Diversity & International Perspectives requirement.

**Prerequisites:** 6 Credits of History.

**Course Typically Offered:** Variable

Credits: 3

### **HTY 491 - Technology and Society Until 1800**

Examines the development of technology from earliest times through the English Industrial Revolution, both 'internally', as tools

and machines, and 'externally', as related to the societies that have produced them and upon which they in turn have had impact.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition Requirement.

**Prerequisites:** Not open to first-year students.

**Course Typically Offered:** Alternate Years

Credits: 3

### **HTY 492 - Technology and Society Since 1800**

Examines the development of technology, with emphasis on America, since the English Industrial Revolution, both 'internally'--as tools and machines--and 'externally'--as related to America and other societies that have produced them and upon which they in turn have had impact.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition Requirement.

**Prerequisites:** Not open to first-year students.

**Course Typically Offered:** Alternate Years

Credits: 3

### **HTY 494 - Women, History and American Society: Selected Topics**

Examines the changing experiences of American women via several intensive, topical, interdisciplinary explorations. Emphasis on women's historical relationship with different institutions or bodies of knowledge. Possible topics include: history of women, family, and the law; women and technology; women and work; or women and racism. May be repeated once for credit.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition, Cultural Diversity and International Perspectives and Writing Intensive Requirements.

**Prerequisites:** 6 hours of history or permission.

**Course Typically Offered:** Spring

Credits: 3

### **HTY 498 - Senior Seminar in History**

Intensive reading, research, and writing under the close supervision of an instructor on a selected problem in American or European history. Required of History majors; (Offered each semester.)



**General Education Requirements:** Satisfies the General Education Writing Intensive and Capstone Experience Requirements.

**Prerequisites:** Restricted to history majors with senior standing.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **HTY 499 - Contemporary Problems in History**

In-depth analysis of a selected controversial, contemporary historical problem. The specific topic and methodology will be chosen jointly by interested students and an instructor.

**Prerequisites:** permission.

**Course Typically Offered:** Variable

Credits: 1-3

### **IEI 010 - Developing Accurate Listening**

Intensive listening practice to improve understanding of the everyday idiomatic English of native speakers in America. For non-native speakers of English.

**Prerequisites:** IEI Placement Testing.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 0

### **IEI 012 - Oral Communication Skills**

Practice of strategies for effective oral communication in modes typical of conversational, professional and academic settings. For non-native speakers of English.

**Prerequisites:** IEI Placement Testing.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 0

### **IEI 013 - Writing Fluently and Accurately**

Intensive English writing process practice ranging from personal free-writing to composing correspondence and essays so as to develop fluency, clarity, organization, expression, grammatical accuracy and editing skills. For non-native speakers of English.

**Prerequisites:** IEI Placement Testing.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 0

### **IEI 014 - Vocabulary and Reading Development**

Strategies for effective reading and the acquisition of new vocabulary. Intensive work with level-appropriate texts to develop reading comprehension and speed. For non-native speakers of English.

**Prerequisites:** IEI Placement Testing.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 0

### **IEI 016 - English Through U.S. History and Culture**

Intensive work with adapted and authentic texts and other media to improve English language proficiency while learning about U.S. culture and history. For non-native speakers of English.

**Prerequisites:** IEI Placement Testing.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 0

### **IEI 017 - English Through Film**

Mining rich sources of comprehensible input found in film to develop aural comprehension, communication fluency, and cultural awareness as well as analytical and critical thinking skills. For non-native speakers of English.

**Prerequisites:** IEI Placement Testing.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 0

## **IEI 019 - Special Topics in ESL**

Language activities to advance English acquisition. Issues and themes from contemporary society. Cross-cultural perspectives. Topics vary. For non-native speakers of English.

**Prerequisites:** IEI Placement Testing.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 0

## **IEI 020 - English for Academic Purposes**

Practice in academic skills required for university studies. Selecting courses, analyzing course expectations, taking notes, working with various lecture styles, researching library and on-line sources, giving presentations, increasing reading efficiency, and interacting with professors. For non-native speakers of English.

**Prerequisites:** IEI Placement Testing.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 0

## **IEI 024 - Academic Composition and Critical Reading**

Intensive practice reading for and writing analytical papers and reports with emphasis on developing students' critical assessment of their own research and writing. For non-native speakers of English.

**Prerequisites:** IEI Placement Testing.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 0

## **IEI 025 - Advanced Speech Communication**

Intensive practice in advanced academic, professional, and public communication. Strategies for group discussion, debate and argumentation—including relevant socio-linguistic conventions in U.S. culture. For non-native speakers of English.

**Prerequisites:** IEI Placement Testing.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 0

## **IEN 110 - Integrated Engineering I**

This course focuses on basic mathematical and physical concepts and applying them in the context of engineering problems. The course covers single variable differential calculus (including and introduction to vectors followed by differential calculus of the algebraic, trigonometric, exponential and logarithmic functions, concluding with the definite integral and the fundamental theorem of calculus), in addition to introductory physics covering classical mechanics and acoustics. In this integrated course the mathematical and physical principles are related to engineering problems both analytically, by introducing and applying high level engineering computing languages (Xcel, Matlab), including introduction to programming, and by hands on experimentation of the physical concepts. A primary focus on the course is to link the learning of calculus and physics with the exploration of the physical world, and extensive use of inverted learning, problem based learning and peer instruction is made. The course may be team taught by multiple faculty members, and relates directly to hands-on projects carried out in Engineering Studio I.

**Corequisites:** IEN 120.

**Course Typically Offered:** Fall.

Credits: 10

## **IEN 120 - Engineering Studio I**

This course introduces the engineering profession, the engineering design process, and the graphical design tools used by practicing engineers (including 2D and 3D CAD). Students combine the practice of sketching along with computer-based modeling to produce a design, and continuously apply their knowledge in the form of design and engineering projects combined with integrated (cover the curriculum) discovery exercises (i.e. forces and vectors, displacements, velocity and acceleration). Teamwork and communication skills are emphasized throughout the course.

**Corequisites:** IEN 110

**Course Typically Offered:** Fall

Credits: 3

## **IEN 130 - Intergrated Engineering II**

This course is intended for students majoring in Civil, Mechanical, Computing and Electrical Engineering, with the major emphasis on understanding basic mathematical and physical concepts and using them to solve a variety of engineering problems. The course covers differential and integral calculus (Integration techniques, application of integrals, parametric equations and polar coordinates, series and sequences, and an introduction to differential equations), and relates the mathematical principles to physical problems both analytically and by using an applying a high level engineering computing language. The previous courses' computing skills are applied throughout, and programming skills are expanded. In addition, the course will include the topics waves and interference, optics, and electrical and magnetic phenomena. A primary focus of the courses is to link the

learning of calculus with the exploration of the physical world, and extensive use of inverted learning, problem based learning and peer instruction is made. The course may be taught by multiple faculty members.

**Prerequisites:** IEN 110

Credits: 9

## **IEN 140 - Engineering Studio II**

The course offers a continuation of IEN 120 CAD treatment (with the introduction of AutoCAD), in addition to covering engineering statics, both from a theoretical perspective, as well as through guided discovery and project based experimentation. A study of force systems and equilibrium, structural models, friction and distributed forces will be presented. The engineering studio will include a variety of hands-on applications, which range from simple structures to more advanced truss and machine constructions, culminating in an open ended design project.

**Prerequisites:** IEN 110 and IEN 120

Credits: 5

## **IEN 210 - Integrated Engineering III**

An introduction to elementary linear algebra and ordinary differential equations including applications, with emphasis on learning and applying the mathematical principles in the context of engineering applications. In addition, the mathematical principles are related to physical problems both analytically and through numerical simulation using a high-level computing language. Computer programming skills are expanded including hardware control applications. The course may be team taught by multiple faculty members.

**Prerequisites:** IEN 130

**Course Typically Offered:** Fall

Credits: 5

## **IEN 230 - Integrated Engineering IV**

An introduction to multivariable calculus with an emphasis on engineering applications. The mathematical principles are related to physical problems both analytically and through numerical simulation using a high-level computing language. Visualizing functions of several variables (using 3D plots, contour plots, surface plots, etc.) is stressed throughout using computer graphics software. The course may be team taught by multiple faculty members.

**Prerequisites:** IEN 130.

Credits: 5

## **IFY 11 - Reading I**

This is an intermediate reading (English for Academic Purposes) course taught at the level B1+ in the CEFR scale. It accommodates students from variety of cultural and educational backgrounds whose first language is not English. It addresses the needs of the adult learners who are planning to study, or are already studying, at university level in English. In this course, students will learn and apply the reading skills essential for academic learning, inquiry, and discourse in the context of authentic academic reading tasks. Students will work to build fluency, comprehension, and vocabulary skills through extensive and intensive reading tasks of increasing complexity. Contemporary academic and literary texts will be used to develop students' critical reading and vocabulary, writing, listening, and speaking skills. Prerequisite: Appropriate English language proficiency

**Prerequisites:** Enrollment is restricted to students in the International Study Center program.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

## **IFY 12 - Reading and Writing II**

A high intermediate literature-based course for English Language Learners. In this course successful students will learn and apply reading and writing skills essential for academic learning, inquiry, and discourse in the context of authentic academic reading and writing tasks. This course offers a hands-on approach to authentic reading and writing tasks. Contemporary academic and literary texts as well as real-world texts will be used to develop students' critical reading abilities, in addition to improving their vocabulary, writing, listening and speaking skills.

**Prerequisites:** Enrollment is restricted to students in the International Study Center program.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

## **IFY 13 - Reading and Writing III**

Instruction in this Reading and Writing II Course is designed to help students understand their current abilities to read and to write English and to provide assistance and practices to facilitate development of these skills that will promote success in their studies at the next level. Students will be required to read both short and long selections to practice determining the writer's intended message in addition to comprehending details and facts. Students will be provided opportunities to improve their abilities to express understandings and ideas in academic writings while critiquing the works of others. Students will write research papers to become familiar with aspects of conducting research and following APA guidelines to produce academically acceptable papers.

**Prerequisites:** Enrollment is restricted to students in the International Study Center program.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

## **IFY 21 - Writing I**

This is an intermediate composition course for English Language Learners who are preparing to enter an American university setting. In this course students will learn and apply the reading and writing skills essential for academic learning, inquiry, and discourse in the context of authentic academic writing and rhetorical tasks. This course offers a hands-on workshop approach to authentic reading and writing tasks and includes teacher modeling, coaching, and feedback to students throughout the writing process.

**Prerequisites:** Enrollment is restricted to students in the International Study Center program.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

## **IFY 31 - Listening and Speaking I**

This course provides short and focused activities to help English Language Learners improve their listening and speaking skills. It includes practice in both mastering the larger message and key words, phrases and specific sounds to assist students in developing better speaking and comprehension skills. Students will practice diction using dialogues, development listening strategies, as well as practice speaking in small groups and individually.

**Prerequisites:** Enrollment is restricted to students in the International Study Center program.

Credits: 3

## **IFY 32 - Listening and Speaking II**

Listening and Speaking II focuses on the comprehension of oral lectures in a variety of liberal arts disciplines. You will learn how to be prepared for lectures, how to listen better during lectures, and how to recognize what you missed in a lecture. There is a strong emphasis on note-taking strategies and class discussion on the lecture. Wherever possible, recordings of authentic university lectures will be used. Speaking focuses on the clear pronunciation of common words and phrases and continues the development of English pronunciation patterns of stress and intonation. Students will practice English speaking skills in different settings utilizing a variety of online and interactive tools through classroom activities, debates and presentations. Pre-requisite: Appropriate English language proficiency.

**Prerequisites:** Enrollment is restricted to students in the International Study Center program.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **IFY 33 - Listening and Speaking III**

This course uses authentic academic tasks to aid students in the comprehension of academic lectures, discussions, and presentations, while also building note taking and organizational skills. Students in this course also focus on assessing and applying appropriate academic presentation and discourse style. When possible, materials from other courses the students are taking will be integrated into classroom activities and assignments. Appropriate English Language proficiency is a prerequisite. Graduate students will be working with graduate-level materials.

**Prerequisites:** Enrollment is restricted to students in the International Study Center program.

Credits: 3

### **IFY 41 - Grammar I**

This course aims to build students' confidence in their spoken and written English. This course builds on students' prior knowledge to reinforce basic language skills and improve the fluency and accuracy of intermediate-level students. Appropriate English language proficiency.

**Prerequisites:** Enrollment is restricted to students in the International Study Center program.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **IFY 42 - Grammar II**

The instruction in Grammar II is designed to build students' abilities to speak and write English effectively. This course builds on students' prior knowledge to reinforce basic language skills and improve the fluency and accuracy of high intermediate-level students. High-interest, academic content area reading lessons, as well as spoken and written assignments keep students involved as they learn and practice the various parts of speech and sentence construction.

**Prerequisites:** Enrollment is restricted to students in the International Study Center program.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **IFY 51 - College Life I**

Instruction in the College Life I course is designed to familiarize students with the services and resources of the University of



Maine and to assist students in developing the study skills and self-management strategies that will facilitate academic success and person growth. The primary goal of the course is to facilitate each student's academic success and personal growth by presenting study and self-management skills, and by exploring issues and ideas of importance in the college experience. The course combines classroom lectures, activities, and discussions with class visits to campus agencies for orientation and visits by representatives of campus departments.

**Prerequisites:** Enrollment is restricted to students in the International Study Center program.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

## **IFY 61 - U S Culture I**

This course will offer English Language Learners a means for analyzing and evaluating the complex social and moral issues that young adults throughout the world have to deal with today and relate these issues specifically to the social and moral landscape of the United States. As students examine their own cultures and compare them with others, culture shock and cultural conflict may be lessened; end enjoyment of cultural difference may be strengthened. Students will engage in interactive tasks, including roles play scenarios, expand upon case study, and a vocabulary task reinforcing both vocabulary acquisition and major concepts from the case. Through the process of reading, writing, discussion, and direct involvement with American students, students in this course will enrich their understanding of today's goal society and sharpen their academic English skills. Prerequisite: Appropriate English language proficiency.

**Prerequisites:** Enrollment is restricted to students in the International Study Center program.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

## **IFY 62 - US Culture II**

This course will offer English Language Learners a means for analyzing and evaluating the complex social and moral issues that are specific to the social and moral landscape of the United States. As students examine their own cultures and compare them with others, culture shock and cultural conflict may be lessened and appreciation for cultural differences may be strengthened. Students will engage in interactive tasks, including researching and case analysis of topics and social issues. Through the process of reading, discussion, analysis, writing and direct involvement with US students, students in this class will enrich their understanding of today's global society while at the same time they are sharpening their academic English skills. This course builds on issues and themes developed in U.S. Culture I. Appropriate English Language proficiency is required.

**Prerequisites:** Enrollment is restricted to students in the International Study Center program.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

## **IFY 71 - Critical Thinking I**

Instruction in this Critical Thinking I course is designed to help students understand the processes and to develop the necessary skills to interpret, analyze and evaluate ideas and arguments. These skills will be developed by teaching them explicitly and directly rather than indirectly. Students will be exposed to analyzing reasoning and to developing their own arguments. A requirement will be imposed on all students to keep a critical thinking notebook to help them track their progress by answering questions as they are set. Because critical thinking involves attempting to change the ways in which people think, students will be given comprehensive practice and feedback.

**Prerequisites:** Enrollment is restricted to students in the International Study Center program.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

## **IFY 080 - UMaine Experience I**

This course will enable International Study Center students to fully function at the University of Maine, from the academic, bureaucratic, and social point of view by giving them all the necessary skills to be integrated into student life at UMaine. Through lectures, workshops, and guest speakers, students will get acquainted with all the relevant offices, rules, and accepted behaviors that are essential to their success at UMaine. Lectures will give students information about different areas such as MaineStreet use, student activities, and student support offices. Workshops will allow students to practice communication skills, organize their time, and manage stress among others. Guest speakers will give students the opportunity to meet faculty and staff from different departments and programs such as the School of Engineering, the Business School, the Health Center, the Counseling Center, the Police, and the Alcohol and Drug Prevention Program. This course is cross-listed as PMP 080.

**Prerequisites:** Enrollment is restricted to students in the International Study Center program.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1

## **IMD 320 - Intermedia Topics in Media Production**

This class will present topical explorations on fabrication process, tools for innovative development, and technical means of production for creative work. Topics will vary from semester to semester but will focus on giving students an in depth exposure to a technical aspect of media, tools and production skills relevant to Intermedial forms. In addition to technical modes of production, these classes will consider technological tools in relation to a variety of theoretical, practical and historical explorations of creativity that will help form the basis of a praxis model of Intermedia. May be repeated for credit.

**Prerequisites:** Sophomore Standing.

**Course Typically Offered:** Fall, Spring

Credits: 3

### **IMD 330 - Intermedia Topics in Technical Development**

This class will provide diverse, topical explorations on fabrication process, tools for innovative development and technical means of production for creative work. Although topics will vary from semester to semester, all iterations will focus on giving students an in-depth exposure to a technical aspect of materials, tools and production skills relevant to Intermedial forms. In addition to technical modes of production, these classes will consider technological tools in relation to a variety of theoretical, practical and historical explorations of creativity that will help form the basis of a praxis model for Intermedia production. May be repeated for credit.

**Prerequisites:** Sophomore Standing.

**Course Typically Offered:** Fall, Spring

Credits: 3

### **IMD 340 - Topics in Intermedia Theory/History**

This class will cover diverse, topical considerations of historical forms of Intermedia and related directions, such as Futurist performance, concrete poetry, installation, artists' books and multiples, Fluxus, sound art and environmental art. Although topics will vary from semester to semester, all iterations will focus on giving students an in depth exposure to historical periods or theoretical aspects of arts creation related to Intermedial forms. In addition to the historical subjects, these classes will consider a variety of related production, practical and process explorations that will help form the basis of a praxis model for Intermedia production. May be repeated for credit.

**Prerequisites:** Sophomore Standing.

**Course Typically Offered:** Fall, Spring

Credits: 3

### **INA 101 - Introduction to International Affairs**

Provides a common introduction to the interdisciplinary study of the field. Examines the core principles and concepts of the study of international affairs, the historical emergence and development of the contemporary global system, and the interaction between political actors and economic forces (especially between states and markets).

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions Requirement.

**Course Typically Offered:** Every years

Credits: 3

## **INA 201 - Topics in International Affairs**

Offers a detailed examination of selected topics in international affairs, providing an opportunity for students to integrate what they have learned about international affairs by focusing in depth on a specific topic. Topics may include globalization and its impact, democratization, role of ethics in international affairs, global stability and peace and ecological environmental issues. (May be repeated if topics vary.)

**Course Typically Offered:** Variable

Credits: 3

## **INT 105 - (ECO, REP) Environmental Policy**

Examines the relation between the natural environment and the economy, the economic sources of environmental degradation and economic analysis of alternative approaches to environmental regulation and management.

**General Education Requirements:** Satisfies the General Education Population and the Environment Requirement.

**Course Typically Offered:** Variable

Credits: 3

## **INT 121 - (CHB) Introduction to Biomedical Engineering**

A survey of the various career options available through faculty discussions, laboratory interactions, presentation/discussions from outside field professionals and tours to area biomedical facilities.

**Prerequisites:** Engineering majors or permission.

**Course Typically Offered:** Variable

Credits: 1

## **INT 188 - Introduction to Integrated Science and Career Exploration**

INT 188 is a variable credit course that involves lecture and laboratory instruction in a data collection and analysis, measuring and graphing techniques, scientific writing, evidence-based thinking, and includes group work, a research project, a career-planning assignment focusing on Science, Technology, Engineering, and Mathematics (STEM) fields including job-shadowing experiences, and a final Research Symposium at the end of the course.

**Prerequisites:** None.

**Course Typically Offered:** Summer

Credits: 1-3

### **INT 195 - (University Wide) Community Engagement / Service Learning**

Community engagement opportunity for students seeking to participate in a service learning environment. Prior approval is required and will be based on a detailed written plan and documentation presented by the student. The course can be repeated up to 4 times for a total of 12 credit. Open to students in all majors as well as students with undeclared majors.

**Prerequisites:** Permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1-3

### **INT 196 - (University Wide) Academic and Career Exploration Internship**

Internship for students seeking to explore their academic and career interests. Prior approval of the internship is required and will be based on a detailed written plan and documentation presented by the student and approved by the Career Center Director or the student's Faculty Advisor or Academic Dean. Open to students in all majors as well as students with undeclared majors.

**Prerequisites:** permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 0-3

### **INT 200 - (SBE) Orientation to Health Professions**

An exploration of career opportunities within the health care industry by course lectures, presentation from health professionals, assigned readings, as well as, individual and team projects. Provides students with an understanding of the history, ethics, personal commitment and other requirements for a career in the healthcare industry. Field (laboratory) experiences enhance course work by directly involving students in: first aid, CPR, patient care, medical records, medical laboratory and x-ray services, athletic trainer services, pharmacy, optometry, podiatry, nursing and ambulance services. These experiences prepare the student for future mentoring opportunities within the health professions community. Lec 3, Lab 1.

**Prerequisites:** BIO 100.

**Course Typically Offered:** Spring

Credits: 4

## **INT 289 - Topics in Interdisciplinary Studies**

Topics with an interdisciplinary focus, bringing together 3 or more relevant disciplines.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

## **INT 302 - Foundations of Universal Design: The Ecology of Human Environments**

This online interdisciplinary course Investigates the new paradigm of human communities that addresses the diversity of all potential users. The environments considered include physical, social, educational, commercial, spiritual, and creative communities. Students from a variety of disciplines (i.e. business and marketing, communication, engineering, education, human development, nursing, philosophy, public policy, new media, sociology, social work, technology, and the arts) will gain theoretical and practical knowledge about ways to create and enhance public and private spaces which are usable by all people and address environmental concerns. This course is designed using the principles of Universal Design and Ecophilosophy, with a special emphasis on systems-analysis and thinking. Students and instructors will utilize these principles in all projects and interactions.

**General Education Requirements:** Satisfies the General Education Population and the Environment and Ethics Requirements.

**Course Typically Offered:** Variable

Credits: 3

## **INT 308 - (SMS,WLE) Conservation and Ecology of Marine Mammals**

Examination of variations in ecological strategies in marine mammals and investigation of marine mammal conservation and health issues. Lec 3.

**Prerequisites:** BIO 319 or SMS 300 or SMS 352 or WLE 200.

**Course Typically Offered:** Spring

Credits: 3

## **INT 333 - (University Wide) Why Do We Believe the Things We Do?**

Focuses on the central question "why do we believe the things we do?" This question drives all individual writing and reading assignments. In this context we'll consider from a multi-disciplinary perspective topics such as: mental models; hidden assumptions and the place of implicit beliefs in reasoning; "thin slicing" and the role of the "adaptive unconscious" in decision making; propaganda, public relations and the role of the media in belief formation, and the nature of impact of propaganda in our

lives; the identification and evaluation of arguments and the difference between persuasive and cogent reasoning.

**General Education Requirements:** Satisfies the General Education Social Context and Institutions and Writing Intensive Requirements.

**Prerequisites:** Sophomore Standing.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **INT 398 - (CHB, CHY, ECE) Undergraduate Research Participation**

Research topics chosen by students in consultation with faculty members. Students submit a final report describing their research and present an oral seminar. (Fall and Summer.)

**Course Typically Offered:** Summer

Credits: 1-3

### **INT 400 - (University Wide) Pop!Tech: The Impact of Technology on Society**

A unique, interdisciplinary, online experience designed around the annual Pop!Tech Conference in Camden, Maine. Explores the impact of technology on society, environment, governance, ethics, and other aspects of our personal, professional, and civic lives - both for our world today and the future we have a hand in shaping.

**General Education Requirements:** Satisfies the General Education Population and the Environment and Ethics Requirements.

**Prerequisites:** Junior standing or permission.

**Course Typically Offered:** Fall

Credits: 3

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

A survey of language structure and its socio-cultural, psychological and historical aspects. Provides conceptual and technical tools for understanding the phenomenon of language. No previous training in languages or linguistics is required.

**Course Typically Offered:** Variable

Credits: 3

## **INT 421 - (CHB) Directed Study in Biomedical Engineering**

A self-directed study opportunity coordinated by the biomedical engineering minor faculty.

**Prerequisites:** INT 121 or permission; engineering majors only.

**Course Typically Offered:** Spring, Summer

Credits: 1-3

## **INT 441 - (ANT, HTY, SMS) Maritime History and Archaeology of New England**

An overview of maritime aspects of New England history, from aboriginal uses through the current state of maritime New England. Emphasis will be given not only to history, but also pertinent archaeological research.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** HTY 103 or HTY 104 or permission of instructor.

**Course Typically Offered:** Fall

Credits: 3

## **INT 479 - (BMB) Methods in Epidemiology**

Introduction to the field of epidemiology, emphasizing methods for assessing factors associated with the distribution and etiology of health and disease, with emphasis on current, real-world health issues and advancement of student skills in the critique of research studies. (This course is identical to INT 579.)

**Prerequisites:** BMB 300 and MAT 232.

**Course Typically Offered:** Fall

Credits: 3

## **INT 482 - (SBE, PSE) Pesticides and the Environment**

Study of the properties and mechanisms of pesticides and their fate in the environment. Includes application technology, governmental regulations, resistance, and environmental fate and transport of pesticides and pesticide alternative. Suggested for individuals who may seek pesticide applicators certification. Lec 3.



**Prerequisites:** One semester of biology and one semester of chemistry; junior standing or permission.

**Course Typically Offered:** Fall

Credits: 3

### **INT 489 - Advanced Topics in Interdisciplinary Studies**

Advanced work addressing topics with an interdisciplinary focus, bringing together 3 or more relevant disciplines.

**Prerequisites:** Permission of Instructor.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **INT 490 - (University Wide) Lies, Deception and Heroification**

Explores the theme of "heroification" as it is developed in the 1998-99 University of Maine Class Book, *Lies My Teacher Told Me: Everything Your American History Textbook Got Wrong*. In this book, author James Loewen maintains that the creation of sanitized heroic figures in high school history textbooks, social archetypes rather than human beings, creates not only "culture-serving distortion" but boring and inaccurate history. Students will explore how lies in history, education, government, business and society in general create "cultural distortion." Emphasizes history as interpretation, the elusive nature of truth in history, and the dynamic variables contributing to moral and ethical tensions swirling around identity, race, gender, freedom, privacy, censorship, governance, propaganda, sexuality and ethnicity.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives and Social Context and Institutions Requirements.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **INT 491 - (University Wide) A Midwife's Tale and the Social Web**

Investigates the concept of "social web" as introduced in the 1999-2000 University of Maine Class Book, *A Midwife's Tale: The Life of Martha Ballard, Based on Her Diary, 1785-1812*. The "social web" is a metaphor to describe how the late eighteenth century community of Hallowell, Maine was woven together by the intricate warp and woof of social relations documented in Ballard's diary and contextualized and interpreted by historian Laurel Ulrich. Using primary, secondary and fictional sources, an interdisciplinary group of faculty will lead students through an investigation of the ethical, legal, social and spiritual issues attendant upon womanhood and women's work in Martha Ballard's time and today.

**General Education Requirements:** Satisfies the General Education Ethics, Social Contexts and Institutions and Cultural Diversity and International Perspectives Requirements.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **INT 492 - Maine Learning Assistant Pedagogy Course**

The Maine Learning Assistant Pedagogy Course is designed for students who are facilitating small-group discussions in lecture, recitations, and/or labs. This course explores issues of teaching and learning, and helps students connect with the science education literature in order to inform instructional practice. The course also covers aspects of educational theory and practical issues associated with helping students learn Science Technology Engineering and Mathematics (STEM) content.

Credits: 1

### **INT 494 - (PAA, POS) Field Experience**

Students participate in a political or governmental organization. Readings and reports required in addition to meetings with faculty sponsor and/or other field experience participants. Six credit hours maximum for any single field experience registration. Majors within the department may not receive more than a total of 12 credit hours toward graduation for any combination of internships and field experience, and not more than 6 credit hours may be used toward the department major.

**General Education Requirements:** This course satisfies the General Education Capstone Experience requirement for Public Administration Majors only.

**Prerequisites:** Junior or Senior standing.

**Course Typically Offered:** Fall, Spring, Summer

Credits: Ar

### **INV 101 - Exploring Innovation**

This course is designed for first-year students who have chosen the Innovation Living/Learning residence community, or who are interested in finding out more about innovation in any field. The course will introduce ways of stimulating creativity and emphasize work in diverse teams. Students will 1) begin to learn principles and processes of innovation, 2) see/hear about applications of innovation in a variety of fields, 3) meet active innovators from campus and the state, and 4) get to know Innovation faculty and each other.

Course meets 1 hour per week until October break, and as an intensive "BootCamp" during the first weekend of the semester. Course fees will be charged in addition to tuition.

The BootCamp will take place in a location away from campus, e.g. at the Schoodic Education and Research Center, with students in residence there. Our activities will mix introductory lectures, presentations by and conversations with guest innovators, field trips, hands-on innovation exercises and team-building activities, and large & small group recreational activities.

Students must attend the BootCamp unless a required University of Maine activity makes this impossible. Students who are unable to attend the BootCamp are required to attend an intensive weekend overnight at the Student Innovation Center later in the semester. Activities will include team-building exercises and a demonstration of innovation principles in a fictionalized organizational setting. Students who attend BootCamp are also invited to this weekend overnight.

**Course Typically Offered:** Fall, Odd Years

Credits: 1

## **INV 180 - Create: Innovation Engineering I**

Provides a systematic approach to creativity, the foundation for students to understand how to generate innovative ideas in any field. Gives students the theories behind and practice using tools to generate meaningfully unique ideas. These tools engage creative stimulus, diversity, and mining for technology and economic, social and cultural trends. Examines case histories that demonstrate how social and cultural contexts and human institutions have been influenced by innovative individuals who have realized original ideas in practice.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions Requirement.

**Course Typically Offered:** Variable

Credits: 3

## **INV 282 - Communicate: Innovation Engineering II**

Combines elements of several disciplines: the clarity of professional writing, the precision of technical writing, and the expressiveness of creative writing. Attention to narrative power of visual imagery as well as text; emphasis on authentic writing, writing as a method of prototyping, and technology translation. Students learn to communicate the benefit, the uniqueness, and the credibility of a concept. Students work with innovators to explore and translate the benefits of technical and specialized ideas to a target audience.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** INV 180.

**Course Typically Offered:** Variable

Credits: 3

## **INV 392 - Commercialize: Innovation Engineering III**

So you have an exciting idea: how do you quantify its risks and benefits? How can you reduce the unknown quantities in your process of creating and realizing? Students learn to apply principles of the scientific method and design experiments for

evaluating ideas and making them real. Students perform rapid test cycles using Fermi estimating, forecasting and statistical analysis to determine the feasibility, sustainability or profitability of ideas.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and the Quantitative Literacy requirements.

**Prerequisites:** INV 180 and INV 282.

**Course Typically Offered:** Fall

Credits: 3

### **INV 401 - Systems: Innovation Engineering IV**

In this course, students will learn how to apply the tools and strategies learned in earlier courses into a system approach to innovation. Through this process, students will learn to lead systems for building alignment, collaboration and capacity to generate and implement new ideas in a wide range of organizations. The course will also cover the fundamentals of systems thinking, tools for measuring the performance of a system, and practice developing innovation strategies.

**Prerequisites:** INV 180 and INV 282 and INV 392

**Course Typically Offered:** Spring

Credits: 3

### **INV 405 - Project: Innovation Engineering V**

Emphasizes the intensive application of concepts explored in earlier Innovation Engineering courses with the purpose of creating students' own project proposals. Students will be expected to identify a problem or opportunity and to research existing solutions to the problem before developing their own ideas.

**Prerequisites:** INV 180 and INV 282 and INV 392, or permission.

**Course Typically Offered:** Variable

Credits: 3

### **INV 406 - Make It Real: Innovation Engineering VI**

Students will have an opportunity during a full semester to take their own idea from proposal stage to prototype and beyond. Projects may be individual or team-based. (Pass/Fail Grade Only)

**Prerequisites:** INV 405 or permission.

**Course Typically Offered:** Spring

Credits: 3

### **INV 470 - Special Topics in Applied Innovation**

Students will have an opportunity during a full semester to take a faculty-led project from proposal stage to prototype and beyond.

**Prerequisites:** Permission.

**Course Typically Offered:** Spring

Credits: 3

### **INV 471 - Special Topics in Innovation**

Provides opportunities for reflective and theoretical approaches to topics in innovation. Topics might include: innovation and medicine, finding money for innovation, innovations and development in the third world, universal design and innovation, innovations in aquaculture.

**Prerequisites:** Permission.

**Course Typically Offered:** Spring

Credits: 3

### **INV 480 - Internship in Innovation**

With submission of proposal approved by the curriculum committee and director of the Innovation Engineering academic program, students working as interns with public or private sector organizations on projects aimed at innovation may register for credit hours. May be repeated for credit up to six credit hours.

**Prerequisites:** Permission.

**Course Typically Offered:** Fall

Credits: 1-6

### **INV 490 - Independent Study in Innovation**

With approval of curriculum committee and director of academic program, students may create a plan of study for one semester with the guidance of a faculty member in Innovation.

**Prerequisites:** Permission.

**Course Typically Offered:** Variable

Credits: 1-3

## **ISE 104 - Design Basics for New Media**

Introduction to principles and theories of visual design, in traditional and electronic media; processes, methods and technologies relative to the creative production of two-dimensional visual imagery; use of the computer as a creative tool for the development of expressive and professional images. Focus on the creative process in visual design. Studio 3.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Course Typically Offered:** Spring.

Credits: 3

## **JST 200 - Introduction to Judaism**

This course presents students with a survey of the developments in Jewish belief, practice, institutions and self-understanding from the Biblical period through the present day. Through the study of both primary and secondary sources, students will become familiar with the major canonical texts of Judaism, religious law, liturgy, rites of passage, the Sabbath and festivals. Students will learn how Jewish values, beliefs, philosophies, rituals and institutions developed within a variety of historical and cultural settings. Students will learn of the unique way in which Jews and Judaism engage with themselves, with G-d, and with humanity.

**Course Typically Offered:** Fall

Credits: 3

## **JST 203 - Jewish History and Culture I: The Middle Ages to 1750**

This course surveys the major developments in Jewish history and thought from the Middle Ages until 1750. Throughout the course, Jews will be considered both as a culture and as a civilization. The overlapping, yet different, experiences of Jewish men and women will be discussed.

**Course Typically Offered:** Fall

Credits: 3

## **JST 204 - Jewish History and Culture II: The Jews & Europe, 1750-1948**

This course surveys the major developments in Jewish history and thought from 1750-1948. Throughout the course, the Jews will be considered as both a culture and a civilization. The overlapping, yet different, experiences of both men and women will be discussed.

**Course Typically Offered:** Spring

Credits: 3

## **KPE 100 - Introduction to Athletic Training**

Designed to encourage students to observe certified athletic trainers and other sports medicine professionals relative to athletic training. Areas of study include bloodborne pathogen training, rules of patient confidentiality, information about the National Athletic Trainer's Association and other governing bodies for certified athletic trainers and other material as it relates to working in an athletic training setting.

**Prerequisites:** ATR major or permission of Athletic Training Education Director.

**Course Typically Offered:** Fall & Spring

Credits: 1

## **KPE 201 - Athletic Training-Clinical Skills I**

Lab based class with first clinical experience. Focuses on the critical thinking and application of injury prevention and immediate care of injuries and illnesses. Direct supervision by trained personnel during clinical experience.

**Prerequisites:** KPE 250 and KPE 100.

**Course Typically Offered:** Fall

Credits: 3

## **KPE 202 - Athletic Training-Clinical Skills II**

Introduction to assessing muscle strength, range of motion, and girth measurements. Students build on assessing a patient's level of fitness learned in KPE 253. Clinical experience continues focus on immediate patient care and incorporates course content to patient care. Direct supervision of trained personnel during clinical experience.

**Prerequisites:** KPE 100 and KPE 253.

**Course Typically Offered:** Spring

Credits: 3

### **KPE 209 - Wilderness First Responder**

The curriculum uses the principles of long-term care, improvised resources, and varying environmental conditions as the framework for learning. Now the most widely recognized and most often required outdoor leader certification, the Wilderness First Responder course was first developed and taught by SOLO in the mid-1980's. Created to provide outdoor leaders, guides, and rangers with the knowledge needed to deal with crises in remote settings, this 80-hour certification course meets DOT National Standards for First Responder with additional protocols for extended-care situations. The practical simulations and labs provide practice in backcountry leadership and rescue skills. Like all SOLO programs, the emphasis of the WFR is on prevention and decision-making.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **KPE 223 - Lifeguard Training**

Develops the necessary skills and competencies to qualify as a certified American Red Cross nonsurf lifeguard.

**Prerequisites:** permission.

Credits: 1

### **KPE 237 - Swimming Skills**

Teaching and improving the skills in swimming, springboard diving, water polo, and related aquatic skills. Each phase developed carefully and fully, enabling the more capable to learn how to teach these basic skills at each level, including the beginning level.

**Prerequisites:** KPE major or permission.

**Course Typically Offered:** Fall & Spring

Credits: 1

### **KPE 250 - Prevention and Care for Sports Injuries**



Involves instruction in and practice of first aid and emergency medical care procedures specific to an active population. Students will practice life saving techniques such as respiratory and cardiac care. They will learn and practice injury prevention using taping and bracing techniques. Students will learn and practice how to assess and manage acute injury care for active individuals.

**Prerequisites:** ATR or KPE major or permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **KPE 253 - Lifetime Fitness for Health**

The course is designed to encourage personal awareness and responsibility for the maintenance of health and physical well-being through the seven dimensions of wellness; physical, intellectual, social, environmental, occupational, spiritual, and emotional. Instruction on the role of physical activity and other health behaviors on the well-being of the human body will be emphasized. Special emphasis will be directed towards developing a healthy balance between demands of school, work and social lives and their impacts on short and long-term health and fitness goals. Specific topics of instruction over the semester will include an introduction to wellness and fitness, aerobic and muscular fitness, flexibility and back health, body composition and weight management, nutrition, stress, and other relevant topics pertaining to health.

**General Education Requirements:** Satisfies the General Education Applications of Scientific Knowledge Requirement.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **KPE 262 - Methods of Teaching Physical Activity**

Methods of teaching physical activity to all age groups and ability levels. Teaching models and practical application of models will be stressed. Teaching effectiveness techniques, theories, principles, instructional design and methods of evaluation will be examined.

**Prerequisites:** ATR or KPE major or permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **KPE 263 - Individual and Net Games**

This is a required skills class for KPE teaching majors. Students will learn specific skills and teaching activities in golf, tennis, badminton, volleyball and other individual sport skills.

**Prerequisites:** KPE Majors only.

**Course Typically Offered:** Fall

Credits: 3

## **KPE 264 - Team Sports and Invasion Games**

This is a required skills class for KPE teacher candidacy majors. Students will learn specific skills and sequential teaching activities for selected team sports including basketball, lacrosse, team handball, and soccer. Emphasis will be placed on teaching content specific pedagogy while using a sport education / invasion game instructional model.

**Prerequisites:** KPE Majors only.

**Course Typically Offered:** Fall

Credits: 3

## **KPE 265 - Outdoor and Adventure Activities**

This course is broken down into four connected, but different sections. The focus of this course is a well-rounded adventure education background. Nordic Sports covers the fundamentals of two areas of Nordic skiing: classical cross country and skating cross country. Climbing Wall Management course emphasizes the presentation of sound fundamental skills to climbing gym participants, the formation of risk assessment and risk management skills. Orienteering covers the basic tools of map, compass and GPS. Challenge Course Facilitator will instruct students apply the educational concepts of adventure-based methods, and to facilitate and process adventure-based activities.

**Prerequisites:** KPE Major or permission.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **KPE 266 - Dance Activities**

This is a required skills class for KPE majors in the teaching tract. Students will learn specific skills and teaching methods in dance activities.

**Prerequisites:** KPE Major or permission.

**Course Typically Offered:** Spring

Credits: 3

## **KPE 270 - Motor Development and Learning**

The understanding and application of major principles in the development and learning of motor behavior from conception through adolescence. The effects of development in the cognitive and affective domains upon the motor domain.

**Prerequisites:** ATR or KPE major or permission.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **KPE 271 - History and Philosophy of Kinesiology and Physical Education**

Provides historical and philosophical knowledge in relation to physical education and sport. Current sociological issues will be discussed. Oral and written presentations will be required covering historical, philosophical and social issues relating to sport and physical education.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** ENG 101.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **KPE 273 - Anatomy and Pathologies of Injuries and Conditions**

Familiarize students with human anatomy and the pathology associated with sports and fitness injuries. Students will focus on human neuromusculoskeletal anatomy, physiological responses of tissues to trauma and the etiology and signs and symptoms of common sports specific injuries and conditions.

**Prerequisites:** BIO 208 or KPE 250.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **KPE 274 - Measuring ROM and Flexibility**

Students interested in allied health professions will learn and practice techniques for measuring flexibility and joint ranges of

motion for the entire human body. A strong musculoskeletal anatomy base is required.

**Prerequisites:** KPE 273

**Course Typically Offered:** Spring

Credits: 1

### **KPE 276 - Manual Muscle Testing and Goniometry**

For students interested in allied health professions to learn and practice techniques that measure flexibility and joint range of motion of nonhealthy patients by using goniometry and inclinometry. The student will also learn how to assess muscular strength using a technique termed manual muscle testing.

**Prerequisites:** KPE 273

Credits: 3

### **KPE 280 - Introduction to Paddle Sports**

Covers the fundamentals of paddling; general water safety, basic paddle strokes, maneuvers, river and sea hydrology specifically in the disciplines of canoeing, sea kayaking, and white water kayaking. In addition, we will get in-depth with swift water rescue, trip organization and water group management. Discussion and projects will focus upon, current issues in paddling, equipment development and sport specific training.

**Prerequisites:** KPE Major or Instructor permission.

**Course Typically Offered:** Fall

Credits: 3

### **KPE 284 - Rock Climbing-Principles and Movement**

Focuses on developing personal movement skills related to rock climbing and helps participants become more familiar with various techniques for climbing slabs, face, cracks and overhangs. Includes basic rope management skills such as knot tying and belaying. Students are expected to develop a concurrent fitness training plan and measure their climbing progress over the length of the course.

**Prerequisites:** KPE Major or Instructor permission.

Credits: 1

## **KPE 285 - Climbing Wall Instructor**

The Professional Climbing Instructor Association (PCIA) Climbing Wall Instructor Course provides instructors and potential instructors with an in-depth and standardized understanding of the skills essential to teaching climbing in an indoor setting. It is the first step in a sequential approach to professional climbing instructor development. The course reinforces the importance of teaching technically accurate information and debunks many common climbing myths. The course emphasizes the presentation of sound fundamental skills to climbing gym participants, the formation of risk assessment and risk management skills and basic problem solving skills such as belay transitions and on-wall coaching and assist techniques.

**Course Typically Offered:** Fall

Credits: 3

## **KPE 286 - Challenge Course Facilitator Skills**

This course familiarizes the student with the use of cooperative games and group initiatives in adventure-based programming. These activities are used to foster personal confidence, decision-making, problem-solving skills, communication and trust among team members. Students will learn to apply the educational concepts of adventure-based methods, and to facilitate and process adventure-based activities. The second half of this course applies the aforementioned programming specifically focusing on low and high ropes course elements to help individuals and groups learn about concepts such as decision-making and problem-solving, leadership, and how to be a team player. The course will also introduce students to the technical methods and skills required to conduct ropes course activities, as well as the associated management issues of safety, and liability.

**Course Typically Offered:** Fall

Credits: 3

## **KPE 287 - Ropes Course Management**

Familiarizes you with the concepts of adventure based programming which relies on activities such as cooperative games, group initiative and problem solving elements, trust activities, and low and high ropes course elements to help individuals and groups learn about concepts such as decision making and problem solving, leadership and how to be a team player. Introduces the technical methods and skills required to conduct ropes course activities, as well as the associated management issues of the safety, liability and staffing training.

**Prerequisites:** KPE Major or Instructor permission, and KPE 286.

Credits: 1

## **KPE 300 - Professionalism in Athletic Training**

Designed to familiarize students of the relationships between athletic trainers and other health care professionals. Students will study the professional aspects of being an athletic trainer and observe health care providers such as nurse practitioners, orthopedic surgeons, and emergency medical technicians.

**Prerequisites:** ATR major or permission of Athletic Training Education Director.

**Course Typically Offered:** Spring

Credits: 1

### **KPE 301 - Athletic Training-Clinical Skills III**

Through hands-on experience under the direct supervision of a certified athletic trainer, the student will focus on evaluating and treating athletic injuries using assessment skills, therapeutic modalities skills necessary for the profession. Focuses on lower extremity evaluations using theories and problem solving skills while in an athletic training setting.

**Prerequisites:** KPE 202, KPE 386 and KPE 388.

**Course Typically Offered:** Fall

Credits: 3

### **KPE 302 - Athletic Training-Clinical Skills IV**

Focus in on evaluation and treatment using assessment skills, therapeutic modalities and rehabilitation exercises for head, cervical/thoracic spine and upper extremity injuries. The student will develop competency and proficiency in these skills while working in an athletic training setting and will be under the direct supervision of a certified athletic trainer.

**Prerequisites:** KPE 301, KPE 385, and KPE 387

**Course Typically Offered:** Spring

Credits: 3

### **KPE 303 - Pharmacology in Athletic Training**

Provides information in pharmacology applications including indications, contraindications, precautions and interactions of medications commonly used for injuries, illness or conditions of the physically active. Regulations of various local and national governing bodies will be discussed.

**Prerequisites:** ATR major or permission of Athletic Training Education Director.

**Course Typically Offered:** Spring

Credits: 1

### **KPE 311 - Maine Wilderness Guide**

Establishes a professional field foundation for students pursuing careers in recreational guiding, wilderness education and outdoor program management. Participation requires a significant commitment from the student. Provides instruction in a variety of general outdoor skills that are essential to be an outdoor guide. Topics include: environmental ethics, camping skills, equipment and clothing selection and use, weather, travel techniques, navigation, safety and risk management, wilderness emergency procedures, specialized travel and trip planning. Each topic is explored in depth and students are asked to practice teaching methods during the course.

**Prerequisites:** KPE 209 or permission.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **KPE 344 - Principles of Coaching**

Supplies an appreciation and background in the art of coaching. Deals with the complex problems facing those that accept the challenge of handling our youth of today in a sport setting. The complete role of the effectiveness of the coach will be surveyed. Field trips to study experienced coaches will be required.

**Prerequisites:** sophomore standing.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **KPE 350 - Educational Gymnastics, Games and Dance**

Development of basic games analysis technique, gymnastic progressions and spotting techniques and group dance development and organization for the elementary and secondary schools. To develop skills in teaching games, dance and gymnastics, utilizing movement themes and activity.

**Prerequisites:** KPE 262; KPE major or permission.

**Course Typically Offered:** Spring

Credits: 3

### **KPE 364 - Elementary School Physical Education**

Specifically designed for the elementary physical educator for the purpose of studying the movement education curriculum used in elementary schools. Emphasis will focus on effective teaching techniques, instructional planning and on the progression of skills used in games, dance and gymnastics. A laboratory teaching experience will be implemented at a local elementary school.

**Prerequisites:** KPE 262 and permission.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **KPE 365 - Curriculum and Instruction in Secondary Physical Education**

Provides the preservice teacher with an opportunity to practice learned effective teaching behavior in various teaching settings. Also provides the preservice teacher with an overview of secondary schools.

**Prerequisites:** KPE 262 and permission.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **KPE 367 - Adapted Physical Education**

Helps teachers, coaches, and recreation personnel meet state and federal requirements for equal opportunities for handicapped persons. Content includes etiology and characteristics for handicapping conditions; implications for teaching; direct experience with handicapped persons.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **KPE 372 - Statistical Methods and Assessments in Physical Education**

Trains students to conduct tests and measurements leading to evaluation in physical education, health/fitness, and athletic training. Considerable attention is given to methods of analysis including descriptive statistics, correlation, regression, t-test, and ANOVA.

**General Education Requirements:** Satisfies the General Education Quantitative Literacy Requirement.

**Prerequisites:** JR standing in ATR or KPE majors or instructor permission



**Course Typically Offered:** Fall & Spring

Credits: 3

### **KPE 376 - Kinesiology**

An introduction to the analysis of human motion based on anatomic knowledge, basic biomechanics and kinesiological principles as they apply to teaching and coaching sport skills.

**Prerequisites:** KPE 273.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **KPE 377 - Biomechanics**

The applied study of physics and kinesiology in the analysis of human movement. Computerized, data acquisition models are used to aid the student in measurement and interpretation of human kinematics.

**Prerequisites:** KPE 273 and KPE 376.

Credits: 3

### **KPE 378 - Physiology of Exercise**

Develops an understanding of the integration and regulation of physiological functions during physical activity. Through investigation of factors affecting human performance, and the coordinated adjustment of body functions to the stress of exercise, students will become more aware of the theoretical and practical applications of exercise science.

**Prerequisites:** BIO 208

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **KPE 383 - Organization and Administration in Athletic Training**

Designed to prepare the student with knowledge, skills and values necessary for the entry-level certified athletic trainer who is

interested in developing and/or administering an athletic training room or other health care facility. Topics such as budgeting, leadership, planning a facility and professional development will be covered.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** KPE 201.

**Course Typically Offered:** Spring

Credits: 3

### **KPE 384 - Practicum in Kinesiology and Physical Education**

Leadership experiences under staff supervision in the service program. Limited opportunities also exist in local public schools.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1-3

### **KPE 385 - Evaluation of Upper Extremity Injuries and Conditions**

Provides theories and techniques for the assessment and evaluation of athletic related injuries specific to the upper extremity. Students are expected to have an understanding of musculoskeletal, neurological and vascular anatomy as well as the biomechanics and injuries specific to the upper extremity. Determination of severity and referral protocols will be presented in reference to management and treatment. The class will consist of lectures and practical lab applications.

**Prerequisites:** KPE 273.

**Course Typically Offered:** Fall

Credits: 3

### **KPE 386 - Evaluation of Lower Extremity Injuries and Conditions**

Provides theories and techniques for the assessment and evaluation of athletic related injuries specific to the lower extremity. Students are expected to have an understanding of musculoskeletal, neurological and vascular anatomy as well as the biomechanics and injuries specific to the lower extremity. Determination of severity and referral protocols will be presented in reference to management and treatment. Lec 3.

**Prerequisites:** KPE 273.

**Course Typically Offered:** Spring

Credits: 3

### **KPE 387 - Therapeutic Exercise for Musculoskeletal Injuries**

Addresses flexibility, strength, proprioception, coordination, cardiovascular, and ergonomic needs as they relate to a patient with musculoskeletal problems. Patient assessment and the use of exercise equipment, program development, and progressions will be discussed. The student will practice these skills in a lab setting.

**Prerequisites:** KPE 273 or permission.

**Course Typically Offered:** Fall

Credits: 4

### **KPE 388 - Therapeutic Modalities**

Provides specific content in the application and analysis of physical agents utilized in the treatment of athletes, including heat, cold, electricity, light, sound, water, traction and massage. Course format includes lab time to allow the student to become proficient with such modalities. Lec 3, Lab 2.

**Prerequisites:** KPE 273.

**Course Typically Offered:** Spring

Credits: 4

### **KPE 389 - Aquatherapy**

Provides the medical practitioner in-depth background and understanding of the use of the aquatics medium to facilitate fitness, sport specific training, and therapeutic rehabilitation.

**Prerequisites:** KPE 387

**Course Typically Offered:** Spring

Credits: 1

### **KPE 398 - Problems in Kinesiology and Physical Education**

Individual work on a problem in the area of health, physical education or recreation.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1-3

### **KPE 400 - General Medical Conditions and Disabilities in Sport**

Offers an overview of general medical topics designed to meet the needs of advanced athletic training students for recognizing and managing medical conditions and disabilities of the physically active. The student will become competent in screening, treating and referring the athlete appropriately for significant medical problems. Structured by body systems combining didactic teachings with practicums.

**Prerequisites:** ATR or KPE major or permission of Athletic Training Education Director.

**Course Typically Offered:** Fall

Credits: 3

### **KPE 401 - Athletic Training Seminar**

The highest level athletic training course. Students will prepare for the National Athletic Trainers' Association Board of Certification athletic training certification exam. The student is required to complete 150 hours in a clinical setting under the supervision of an Approved Clinical Instructor or Clinical Instructor. Will include completion of skills proficiencies as required by the National Athletic Trainers' Association Education Council as well as mentoring Levels 1 and 2 Athletic Training Students. Students will discuss recent sports medicine research.

**Prerequisites:** Senior standing; ATR or KPE major or permission of Athletic Training Education Director.

**Course Typically Offered:** Fall

Credits: 3

### **KPE 425 - Health Promotion and Disease Prevention**

Provides specific content in health promotion and disease prevention and explores current public health issues. Program planning, needs assessment, intervention strategies and evaluation models will be presented with the constructs of epidemiological principles as they relate to increasing employee health and wellness and decreasing the incidence and prevalence of chronic disease.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** KPE Major, Junior standing or Instructor permission.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **KPE 426 - Exercise Prescription and Leadership**

Provides specific knowledge, skills and competencies needed to appropriately develop, prescribe, instruct and manage various kinds of exercise programs for diverse populations.

**Prerequisites:** KPE 378.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **KPE 427 - Health Fitness Internship**

Supervised experience in fitness, health promotion and in conducting recreation programs in camp, community, social agency or institution situations.

**General Education Requirements:** Satisfies the General Education Capstone Experience Requirement.

**Prerequisites:** KPE 426

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3-6

### **KPE 483 - The Comprehensive School Health Program**

Examines the components of a school health program. Includes policies, procedures and activities designed to promote health of students and staff. Components that will be addressed include: health instruction, curriculum development, school health services, environment and promotion. Designed for those seeking teacher certification in health.

**Course Typically Offered:** Spring

Credits: 3

### **KPE 484 - Methodology of Teaching Health Education**

Focuses on the appropriate methodology necessary for teaching health education (K-12). Content, curriculum, and evaluation models will be presented within a theoretical framework that emphasizes critical inquiry and practical application. Designed for those seeking teacher certification in health.

**Course Typically Offered:** Fall

Credits: 3

### **KPE 490 - Nutrition for Sports and Exercise**

In-depth study of the role nutrition plays in the training regime of athletes and those in the general population who include regular exercise in their personal lives. Topics include: digestion and absorption of food nutrients, bioenergetics, fluid balance and rehydration, ergogenic aids, proper weight loss and disordered eating.

**Prerequisites:** FSN 101 and KPE 378.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **LAS 100 - Majoring in the Liberal Arts and Sciences**

Orientation to campus resources, including people, and to the academic community, with special emphasis on the values and habits that characterize the liberal arts and sciences (such as curiosity, openness to new ideas, respect for people who hold different points of view, an appreciation for careful methods of discovery and proof, and a willingness to share good ideas for the benefit of the community). Stresses access to resources for college and career success.

**Course Typically Offered:** Fall

Credits: 1

### **LAS 101 - Success in College**

Orientation to campus resources, including people, and to the academic community, with special emphasis on the values and habits that characterize appreciation for higher education (such as curiosity, openness to new ideas, respect for people who hold different points of view, an appreciation for careful methods of discovery and proof, and a willingness to share ideas for the benefit of the community). This course will stress access to resources, self-evaluation, and personal assessments to develop learning strategies for success in college and life. Students will identify and understand tools that will facilitate a successful college experience.

**Prerequisites:** Permission

Credits: 1

### **LAS 102 - Success in College**

Orientation to campus resources, including people, and to the academic community, with special emphasis on the values and habits that characterize appreciation for higher education (such as curiosity, openness to new ideas, respect for people who hold different points of view, an appreciation for careful methods of discovery and proof, and a willingness to share ideas for the benefit of the community). This course will stress access to resources, self-evaluation, and personal assessments to develop learning strategies for success in college and life. Students will identify and understand tools that will facilitate a successful college experience.

**Prerequisites:** Permission

Credits: 1

## **LAS 150 - Success in College**

In this course, you will work closely with a College of Liberal Arts and Sciences faculty or staff member. You and your classmates will learn how to join an intellectual conversation at a significantly higher level than you have been accustomed to in high school. As a first-year student, you will join an academic community of thinkers, learners and researchers who are committed to achieving and maintaining the rigors and rewards of a liberal arts education. Through active participation in this course, you will acquire the skills necessary for success in college and, therefore, life. The goals of the course are the following:

- Discuss and practice basic college study skills.
- Provide an introduction to responsible conduct at the University of Maine, including how to communicate appropriately with faculty and professional staff.
- Discuss the importance of attendance, accountability, perseverance and practice engagement in academic planning/management for success.
- Overview of the many campus academic and social resources.
- Introduce students to the necessity of studying and interpreting primary sources.
- Instill, through practice, the ability to express themselves cogently.
- Enhance students' ability to communicate their ideas in a professional manner.

**Prerequisites:** 1st year College of Liberal Arts students

**Course Typically Offered:** Every year

Credits: 1

## **LAS 195 - LAS Internship**

Supervised internship experience for College of Liberal Arts and Sciences (CLAS) majors. Prior approval of the internship is required and will be based on a detailed written plan and documentation approved by the student's Faculty Advisor. Open to students in all CLAS majors. Work must be related to the student's educational and career goals. Credit will not be awarded for work completed prior to registration for this course. Applications can be obtained in the CLAS Dean's office (Pass/Fail Grade Only).

**Prerequisites:** Prerequisites: Approval by CLAS Faculty Advisor.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1-3

### **LAS 395 - SL: 4-H STEM Amassador Experience**

Students will deliver science, technology, mathematics or engineering activities with youth in local out of school/after school or in-school learning environments. Students will receive specialized training in experiential learning, youth development, risk management and best practices for teaching science, and will also be trained to use provided curricula and materials. Evaluation of the experience for both students and the youth they serve will be expected. Course will meet four times over the semester, with significant time spent in direct service with youth. This course has been designated as a UMaine service-learning course. Upon successful completion of the course, a digital badge will be issued (level 1-3).

NOTE: Permission of department, background and reference checks required.

**Prerequisites:** Prerequisites: Permission, Background Check and Reference Checks.

**Course Typically Offered:** Spring, Summer, Fall

Credits: 3

### **LAS 497 - Independent Study: Capstone for Bachelor of University Studies**

Independent study: Capstone for Bachelor of University Studies

**General Education Requirements:** Satisfies the General Education Writing Intensive and Capstone Experience requirements.

**Prerequisites:** This course is open only to students who have been formally accepted into the BUS-CLAS pathway program and are in their last semester before graduating.

**Course Typically Offered:** Fall, Spring, Summer.

Credits: 3

### **LAS 499 - Senior Capstone in Interdisciplinary Studies**

Students develop extended research projects or engage in significant internship experiences related to their individualized programs of study in the College of Liberal Arts and Sciences' Bachelor of Arts in Interdisciplinary Studies. Projects are supervised by the student's advisory committee and must be approved by the college's Interdisciplinary Studies Committee.

**General Education Requirements:** Satisfies the General Education Capstone Experience Requirement.

**Prerequisites:** permission.



**Course Typically Offered:** Spring

Credits: 3

### **LAT 101 - Elementary Latin I**

Fundamentals of the Latin language.

**Course Typically Offered:** Fall

Credits: 4

### **LAT 102 - Elementary Latin II**

Fundamentals of the Latin language.

**Prerequisites:** LAT 101 or equivalent.

**Course Typically Offered:** Spring

Credits: 4

### **LAT 203 - Readings in Latin Literature I**

Selections from Latin prose authors: Cicero, Caesar, the letters of Pliny. Facility in reading through grammatical analysis will be emphasized.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Cultural Diversity and International Perspectives Requirements.

**Course Typically Offered:** Fall

Credits: 3

### **LAT 204 - Readings in Latin Literature II**

Selections from Latin poetry. Meter, scansion and the interpretation of poetry will be emphasized.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** LAT 199 or LAT 203 or equivalent or permission of instructor.

**Course Typically Offered:** Spring

Credits: 3

## **LAT 452 - Roman Philosophical Thought**

Examines the three major philosophical schools: Academic, Stoic, Epicurean, and their influence on Roman thought with selections from: Lucretius, De Rerum Natura, and Cicero's philosophical essays. Offered every three years.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Course Typically Offered:** Variable

Credits: 3

## **LAT 453 - Poetry of the Republic and Early Empire**

Considers the lyric poetry of Catullus, the Odes of Horace and the origin and development of satire, with selections from the satires of Horace and Juvenal. Offered every three years.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Course Typically Offered:** Variable

Credits: 3

## **LAT 454 - Prose of the Republic and of Early Empire**

Includes selections from Cicero's letters, Pliny's letters, and Tacitus' Annals. Offered every three years.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Course Typically Offered:** Variable

Credits: 3

## **LAT 497 - Projects in Latin I**

Individual work on a project selected by the student. (maximum: 3 credit hours.)

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** LAT 204 or equivalent or permission of instructor.

**Course Typically Offered:** Fall

Credits: Ar

## **LAT 498 - Projects in Latin II**

Individual work on a project selected by the student. (maximum: 3 credit hours.)

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** LAT 204 or equivalent or permission of instructor.

**Course Typically Offered:** Spring

Credits: Ar

## **LBR 200 - Information Literacy**

Introduces students to the production, transmission, organization, use and control of information. Provides the skills necessary to navigate the many kinds of information resources available today, including the Internet, other electronic formats and print materials. Emphasis on developing critical thinking skills.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions Requirement.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **LDR 100 - Foundations of Leadership**

Introduction to the study of leadership as a personal and social phenomenon from a multidisciplinary perspective, with a focus on the development of practical leadership skills and behaviors. Emphasis on exploring the nature of leadership in diverse human

contexts through civic and community engagement.

**General Education Requirements:** Satisfies the Social Context and Institutions General Education Requirement.

**Course Typically Offered:** Fall and Spring

Credits: 3

## **LDR 200 - Leadership Ethics**

An interdisciplinary examination of moral and ethical theory as applied to leadership in a wide variety of contexts. Extensive consideration given to ethical challenges faced by past, present, and future leaders in applied settings. Topics may include: self-interest; ambition; duties of leaders and followers; virtue; relativism; utilitarianism; consequentialism; "dirty-hands" problems; partiality; cross-cultural differences.

**General Education Requirements:** Satisfies the Ethics and the Writing Intensive General Education Requirements

**Prerequisites:** LDR 100 or permission

**Course Typically Offered:** Fall and Spring

Credits: 3

## **LDR 300 - Advanced Leadership Theory and Practice**

An advanced interdisciplinary examination of the study of leadership from theoretical, empirical, and applied perspectives, with special emphasis on case studies from Maine's unique legacy of exemplary public leaders. Significant attention to the practical development of applied leadership skills through group exercises, case studies, self-reflection assignments, and problem-based learning.

**General Education Requirements:** Satisfies the Social Contexts and Institutions General Education Requirement

**Prerequisites:** LDR 100 or permission

**Course Typically Offered:** Fall and Spring

Credits: 3

## **LDR 350 - Topics in Leadership Studies**

Offers an in-depth examination of a selected topic in leadership studies.

**Prerequisites:** LDR 100 or permission

**Course Typically Offered:** Fall and Spring

Credits: 3

### **LDR 499 - Leadership Engagement Practicum**

Students participate in a fieldwork practicum or internship with a substantial leadership component, while examining and reflecting upon their leadership skills and knowledge in an applied setting. Includes project assignments that synthesize academic and applied experiences.

**Prerequisites:** LDR 300 or Permission of the instructor

**Course Typically Offered:** Fall and Spring

Credits: 3

### **LST 101 - Introduction to Labor Studies**

Introduction to the field of Labor Studies, and interdisciplinary area of study encompassing the labor movement and labor organizations, work and the labor market, social class, employment law and relations, labor economics, diversity in work and the labor movement, and the sociology of work.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions Requirement.

**Course Typically Offered:** Fall

Credits: 3

### **LST 201 - Work and Labor in a Global Economy**

Provides a critical analysis of U.S. labor and the workplace from a labor studies perspective, which comprises an academic area of study encompassing: work, employees, the labor movement and organizations, employment law and relations, labor economics, and the sociology of work. Topics include: a historical overview of labor, social class and work, the role of conflict, power, and inequality, including gender, race, and class, the evolution of employment law and labor relations, organization and role of unions, workforce diversity and demographics, labor and contemporary issues involving technology, corporations, politics, and the global economy.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions Requirement.

**Prerequisites:** ECO 120 or HTY 104 or POS 100 or SOC 101 or permission of instructor.

**Course Typically Offered:** Spring

Credits: 3

## **MAT 101 - The Nature and Language of Mathematics**

An opportunity for non-science majors to broaden their understanding of mathematics and to examine the connections between mathematics and other areas of human understanding. Specific topics may vary from semester to semester and are chosen to provide students with the opportunity to explore, through inquiry and discovery, the development, structure, and application of mathematical systems.

**General Education Requirements:** Satisfies the General Education Quantitative Literacy Requirement.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

## **MAT 103 - Elementary Algebraic Models in Our World**

An introduction to the applications of algebra with a focus on data analysis and model building. Topics include graphs, algebraic equations and functions. Primary attention will be given to using linear, quadratic and exponential functions to represent and interpret real world applications.

**General Education Requirements:** Satisfies the General Education Quantitative Literacy Requirement.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

## **MAT 107 - Elementary Descriptive Geometry**

Designed to prepare students to teach the geometry included in a modern NCTM STANDARDS based K-8 curriculum. Emphasis will be on geometric exploration activities, problem solving and informal deductive reasoning using many of the manipulatives used to teach geometric concepts in grades K-8.

**General Education Requirements:** Satisfies the General Education Quantitative Literacy Requirement.

**Prerequisites:** High school geometry required. Elementary Education, Child Development-Early Childhood Education, and Art Education majors only.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

## **MAT 108 - Elementary Numerical Mathematics From A Modern Perspective**

Designed to prepare students to teach the non-geometric mathematics included in a modern NCTM STANDARDS based K-8 curriculum. Emphasis will be on the structure of arithmetic, development of good number sense, basic number theory, understanding probability and the use of descriptive statistics. Focuses on problem solving, and the development of arithmetic and algebraic reasoning skills.

**General Education Requirements:** Satisfies the General Education Quantitative Literacy Requirement.

**Prerequisites:** Elementary Education, Child Development-Early Childhood Education, and Art Education majors only.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **MAT 111 - Algebra for College Mathematics**

This course covers the basic topics in algebra needed to enter a mathematics course at the precalculus level. The covered topics include a brief review of the real number system (including absolute value, exponents, roots, and radicals), linear equations and inequalities, quadratic equations, graphs, functions (primarily linear and other polynomial), factoring, rational and radical expressions. Optional topics include systems of equations, variation, exponential and logarithmic functions.

**General Education Requirements:** Note: This course does not satisfy the General Education in Mathematics Requirement.

**Prerequisites:** Adequate performance on Mathematics Placement Exam.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **MAT 115 - Applied Mathematics for Business and Economics**

Topics in discrete mathematics, finite mathematics, and calculus with applications to business and economics. Topics include linear functions and regressions, the mathematics of finance, probability, and differential calculus.

**General Education Requirements:** Satisfies the General Education Quantitative Literacy Requirement.

**Prerequisites:** A grade of C or better in MAT 111, or no grade record in MAT 111 and a passing score on Part 2 of the Math Placement Exam.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **MAT 122 - Pre-Calculus**

Designed as a transitional course between high school algebra and college mathematics, particularly calculus. Topics include a detailed study of polynomial, rational, exponential, logarithmic and trigonometric functions, stressing ideas needed by those who will take calculus.

**General Education Requirements:** Satisfies the General Education Quantitative Literacy Requirement.

**Prerequisites:** A grade of C or better in MAT 111, or no grade record in MAT 111 and a passing score on Part 2 of the Math Placement Exam.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 4

### **MAT 126 - Calculus I**

An introduction to calculus for students in mathematics, engineering, and the sciences. Covers the differential calculus of the algebraic, trigonometric, exponential and logarithmic functions, concluding with the definite integral and the fundamental theorem of calculus. The approach is intuitive and geometric, with emphasis on understanding the basic concepts of function, limit, derivative and integral.

**General Education Requirements:** Satisfies the General Education Quantitative Literacy Requirement.

**Prerequisites:** A grade of C or better in MAT 122, or no grade record in MAT 122 and a passing score on Part 3 of the Math Placement Exam.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 4

### **MAT 127 - Calculus II**

Completes the study of single-variable calculus. Topics covered include inverse trigonometric functions, hyperbolic functions, methods of integration, improper integrals, indeterminate forms, parametric equations, polar coordinates and infinite series.

**General Education Requirements:** Satisfies the General Education Quantitative Literacy Requirement.

**Prerequisites:** A grade of C or better in MAT 126.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 4

### **MAT 228 - Calculus III**



For students of mathematics, engineering and the sciences. Vector algebra, geometry and calculus; multivariable differential and integral calculus, including the theorems of Gauss, Green and Stokes.

**Prerequisites:** A grade of C or better in MAT 127.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 4

## **MAT 258 - Introduction to Differential Equations with Linear Algebra**

An introduction to elementary linear algebra and ordinary differential equations including applications. NOTE: Because of overlap, MAT 258 and MAT 259 cannot both be taken for degree credit. (Not open to students who have already taken MAT 262 or MAT 259.)

**Prerequisites:** A grade of C or better in MAT 127.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 4

## **MAT 259 - Differential Equations**

The theory and applications of ordinary differential equations for science and mathematics students intending to take further courses in applied mathematics. NOTE: Students planning to take MAT 262 or MAT 453 should choose MAT 259 instead of MAT 258. Because of overlap, MAT 258 and MAT 259 cannot both be taken for degree credit.

**Prerequisites:** A grade of C or better in MAT 228.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **MAT 261 - Introduction to Abstract Mathematics**

Topics covered typically include logic, basic set theory, relations and functions, sequences, limits, cardinality, and algebraic and geometric structures, but may vary somewhat with the instructor. Class size will remain small, not to exceed 20 students. The goal is to enable students to read, critique, construct, and write mathematical proofs. At least 40% of the student's grade will be based on the quality of written work. Written assignments must present mathematical arguments in a clear, logical manner, using standard mathematical notation as well as correct English grammar, spelling, and punctuation. Students will be given considerable coaching and feedback with preliminary drafts so that submitted final versions of their work will be of acceptable quality.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** A grade of C or better in MAT 127 or permission.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **MAT 262 - Linear Algebra**

An introduction to matrices, systems of linear equations, linear transformations, determinants, vector spaces, orthogonality, eigenvalues and eigenvectors, with applications. Some use will be made of mathematical software. NOTE: Because of overlap, MAT 258 and MAT 262 cannot both be taken for degree credit.

**Prerequisites:** A grade of C or better in MAT 127.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **MAT 300 - Topics in Mathematics**

Topics in mathematics not regularly covered in other courses. Content varies to suit current needs. May be repeated for credit.

**Prerequisites:** Permission of department.

**Course Typically Offered:** Not Regularly Offered

Credits: 1-3

## **MAT 305 - Mathematics for Secondary School Teachers**

Intended for prospective teachers of secondary school mathematics. MAT 305 satisfies the state certification requirements for a methods course. Topics covered include issues and problems in mathematics education, classroom management and selected topics in mathematics pertinent to the secondary curriculum.

**Prerequisites:** permission of instructor; open to prospective secondary teachers only.

**Course Typically Offered:** Fall

Credits: 3

## **MAT 329 - Problems Seminar II**

Problem-solving in selected areas of mathematics. Material will be taken from various problem books, competitions and mathematical periodicals. Recommended for students who wish to participate in the annual Putnam competition. May be repeated for credit.

**Prerequisites:** A grade of C or better in MAT 261 or permission.

**Course Typically Offered:** Fall

Credits: 1

## **MAT 400 - Topics in Mathematics**

Topics in mathematics not regularly covered in other courses. Content varies to suit current needs. May be repeated for credit.

**Prerequisites:** Permission of department.

**Course Typically Offered:** Variable

Credits: 1-3

## **MAT 401 - Capstone Seminar in Mathematics**

Required of all mathematics and statistics majors. Students will be asked to draw upon and integrate their mathematics course work by exploring mathematical topics in their historical and scientific context. Students are expected to exhibit innovative problem-solving and thoughtful writing. Each student will be required to write a paper on the topic under investigation and to present the results in a colloquium talk to the class.

**General Education Requirements:** Satisfies the General Education Capstone Experience Requirement.

**Prerequisites:** A grade of C or better in MAT 261, MAT 262 and senior standing.

**Course Typically Offered:** Spring

Credits: 3

## **MAT 425 - Introduction to Real Analysis I**

A study of functions of a real variable and the related topology of the real line. Concepts of limit, convergence, continuity and differentiability are studied.

**Prerequisites:** A grade of C or better in MAT 228 and MAT 261.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **MAT 426 - Introduction to Real Analysis II**

A continuation of MAT 425 emphasizing integration and sequences and series of functions. Contents may vary from year to year.

**Prerequisites:** A grade of C or better in MAT 425.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **MAT 435 - Introduction to Mathematical Statistics**

Topics include moment generating functions, distribution of functions of random variables, sampling distributions, principles of estimation and hypothesis testing, limit theorems and order statistics.

**Prerequisites:** A grade of C or better in STS 434.

**Course Typically Offered:** Spring

Credits: 3

### **MAT 445 - History of Mathematics**

Deals with the lives and times of mathematicians, while focusing on mathematical ideas. Designed to acquaint the student with the evolution of various mathematical disciplines and to develop an appreciation of the problems faced by and often solved by mathematicians.

**Prerequisites:** A grade of C or better in MAT 127 or Department permission.

**Course Typically Offered:** Spring

Credits: 3

### **MAT 451 - Dynamical Systems**

A study of the nature and behavior of solutions of linear and nonlinear systems of differential and difference equations through mathematical analysis and the use of available menu-driven PC software. For students in mathematics and the sciences. Some knowledge of vectors and matrices and some familiarity with personal computers is recommended.

**Prerequisites:** A grade of C or better in MAT 258 or MAT 259 or permission.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **MAT 452 - Complex Analysis**

An introduction to functions of complex variables including differentiation, integration, series, mappings and applications.

**Prerequisites:** A grade of C or better in MAT 228.

**Course Typically Offered:** Variable

Credits: 3

### **MAT 453 - Partial Differential Equations I**

Introduction to general properties of partial differential equations followed by solutions of specific equations. Techniques include eigen function expansions, operational methods, and Green's functions.

**Prerequisites:** A grade of C or better in MAT 259 or permission.

**Course Typically Offered:** Fall

Credits: 3

### **MAT 454 - Partial Differential Equations II**

A continuation of MAT 453.

**Prerequisites:** A grade of C or better in MAT 453.

**Course Typically Offered:** Variable

Credits: 3

## **MAT 463 - Introduction to Abstract Algebra I**

A study of algebraic systems characterized by specific axiom systems. Begins with a study of sets theory, functions, and operations, and continues with topics selected from group theory, ring theory, and linear algebra.

**Prerequisites:** A grade of C or better in MAT 261 and MAT 262.

**Course Typically Offered:** Fall

Credits: 3

## **MAT 464 - Introduction to Abstract Algebra II**

A continuation of MAT 463, with emphasis on properties of rings and fields and culminating in Galois Theory.

**Prerequisites:** A grade of C or better in MAT 463.

**Course Typically Offered:** Spring

Credits: 3

## **MAT 465 - Theory of Numbers**

Elementary properties of integers including divisibility, prime and composite numbers, uniqueness of prime factorization, Diophantine equations, congruences and continued fractions.

**Prerequisites:** A grade of C or better in MAT 261 or permission.

**Course Typically Offered:** Spring

Credits: 3

## **MAT 471 - Differential Geometry**

The application of multivariable calculus to the study of curves, surfaces and their higher-dimensional analogues.

**Prerequisites:** A grade of C or better in MAT 228 and in either MAT 258 or MAT 262.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

## **MAT 475 - Higher Geometry**

Topics include: constructions, Euclidean properties, Ceva's and Menelaus' theorems with applications--Desargues', Pappus' and Pascal's theorems, isometries, axiometric approach to one of the geometries, algebraic models for geometry, Klein's Erlanger program, classical construction problems.

**Prerequisites:** A grade of C or better in MAT 228 or permission.

**Course Typically Offered:** Fall

Credits: 3

## **MAT 481 - Discrete Mathematics**

Primarily designed for both mathematics and computer science majors. While the calculus-based mathematics of classical engineering and physical science is essentially "continuous," the finite mathematics of computer science and some social sciences is essentially "discrete" or "combinatorial." MAT 481 is an introductory course offered in this spirit. Topics covered typically include graphs and networks, analysis of algorithms, generating functions and recurrence relations, graph coloring, satisfiability, computational complexity, automata and languages, Turing machines and computability, and a brief introduction to the theory of NP-completeness.

**Prerequisites:** A grade of C or better in MAT 261 or MAT 262 or Department permission.

**Course Typically Offered:** Fall

Credits: 3

## **MAT 486 - Biological Modeling and Simulation**

Mathematical and computational models primarily from population biology and epidemiology, including deterministic and stochastic, discrete- and continuous-time, and spatial and network models. A software package such as Matlab or R will be used for simulations and visualization, and for additional topics such as vectorized calculations, function optimization, and differential equation solvers, which have a wide variety of applications in the sciences and engineering. Some basic familiarity with probability is recommended.

**Prerequisites:** Permission

Credits: 3

## **MAT 487 - Numerical Analysis**

An introduction to computational methods for solving numerical problems. Topics such as interpolation, systems of linear or

nonlinear equations, numerical integration, eigenvalues, optimization, ordinary and partial differential equations are considered.

**Prerequisites:** A grade of C or better in MAT 127 or permission.

**Course Typically Offered:** Variable

Credits: 3

## **MEE 101 - Introduction to Mechanical Engineering**

Introduces first-year and transfer students to the Mechanical Engineering Department. Topics include the curriculum, the faculty, the department's resources and the profession in general. Students will be introduced to typical problems in Mechanical Engineering whose solution may require experimental, analytical or numerical techniques. A teamwork approach will be emphasized. Lec 1. (Fall.)  
(Pass/Fail Grade Only.)

**Prerequisites:** Mechanical Engineering majors only or permission.

**Course Typically Offered:** Fall

Credits: 1

## **MEE 120 - Engineering Graphics and Computer Aided Design**

An introduction to engineering graphics and computer-aided design (CAD) using a 3D solid modeling software package. Topics include geometric construction, sketching, orthographic projection, isometric, sectional and detailed views, geometric dimensioning and tolerancing, engineering drawings and assemblies. Drawing and CAD laboratory classes will consist of short demonstrations, lectures and exercises and student work period. Rec ( 1 hour), Lab (2 hours)

**Prerequisites:** MEE major or permission

**Course Typically Offered:** Fall

Credits: 2

## **MEE 150 - Applied Mechanics: Statics**

A study of force systems and equilibrium, structural models, friction, distributed forces. Designed to develop the ability to analyze and solve engineering problems. Rec 3. (Fall and Spring.)

**Prerequisites:** MAT 126.

**Course Typically Offered:** Fall & Spring



Credits: 3

### **MEE 230 - Thermodynamics I**

Covers energy and energy transformations, the First and Second Laws applied to systems and to control volumes, thermodynamic properties of systems, availability of energy. Rec 3. (Fall and Spring.)

**Prerequisites:** MAT 127.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **MEE 231 - Thermodynamics II**

A continuation of MEE 230 and includes thermodynamics of mixtures, chemical thermodynamics, thermodynamics of fluid flow, vapor and gas cycles, applicable to compressors, internal combustion engines and turbines. Computers used. Rec 3 (Spring.)

**Prerequisites:** COS 220 or ECE 177; and a grade of C or better in MEE 230.

**Course Typically Offered:** Spring

Credits: 3

### **MEE 251 - Strength of Materials**

The principles of solid mechanics and their applications to practical problems, stresses and deflections in axial loading, torsion, beams, columns, combined stresses. Rec 3. (Fall and Spring.)

**Prerequisites:** MAT 127 and a grade of C or better in MEE 150.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **MEE 252 - Statics and Strength of Materials**

The basic principles of statics and their applications in strength of materials. Emphasis on equilibrium of various systems, stresses and deformations of axially loaded members, connections, circular shafts, beams and columns. Rec 3 (Fall and Summer.)

**Prerequisites:** MAT 127.

**Course Typically Offered:** Fall

Credits: 3

## **MEE 270 - Applied Mechanics: Dynamics**

Motion of particles and rigid bodies, impulse and momentum, work and energy and simple harmonic motion, force, mass and acceleration. Rec 3. (Fall and Spring.)

**Prerequisites:** A grade of C or better in MEE 150; or MEE 252.

**Corequisites:** MAT 228

**Course Typically Offered:** Fall & Spring

Credits: 3

## **MEE 320 - Materials Engineering and Science**

The principles of material science with emphasis on the relationship between structure and properties and their control through composition, mechanical working and thermal treatment. Rec 3. (Spring.)

**Prerequisites:** A grade of C or better in MEE 230 and in MEE 251.

**Course Typically Offered:** Spring

Credits: 3

## **MEE 341 - Mechanical Laboratory I**

An introduction to experiment design, data analysis, laboratory techniques, instrumentation, and calibration of equipment. Application to thermodynamics, mechanics of materials, fluid mechanics and metallurgy. Rec 1, Lab 3. (Spring.)

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** MAT 258, MEE 360, and a grade of C or better in MEE 251.

**Corequisites:** ECP 341

**Course Typically Offered:** Spring

Credits: 3

### **MEE 360 - Fluid Mechanics**

An introduction to fluid mechanics including fluid statics, kinematics, Bernoulli equation, viscous flows, dimensional analysis and similitude and external flows. Rec 3. (Fall.)

**Prerequisites:** A grade of C or better in MEE 230 and in MEE 270

**Corequisites:** MAT 258 or MAT 259

**Course Typically Offered:** Fall

Credits: 3

### **MEE 370 - Modeling, Analysis and Control of Mechanical Systems**

Introduces the student to a unified approach to abstracting real mechanical, thermal and hydraulic systems into proper models to meet design and control system objectives. Topics include modeling of lumped mechanical, thermal and fluid systems, Laplace transforms and transfer function representation, free and forced response of second order linear time-invariant systems, frequency response, actuators and sensors, compensation and design of feedback control systems with emphasis on mechanical engineering applications. Includes laboratory experimentation. (Fall.) Rec 3.

**Prerequisites:** ECE 209, MAT 258, and a grade of C or better in MEE 270.

**Course Typically Offered:** Fall

Credits: 3

### **MEE 380 - Design I**

Kinematical design of machines. Rec 3. (Fall.)

**Prerequisites:** A grade of C or better in MEE 270.

**Course Typically Offered:** Fall

Credits: 3

### **MEE 381 - Design II**

Advanced concepts in mechanics of materials, stress concentration. Design of mechanical components subjected to static and fatigue loads. Synthesis and selection of various machine components including shafts, bearing, gears and gear trains, screws, fasteners and springs. Design project. Rec 3

**Prerequisites:** MEE 120 and a grade of C or better in MEE 251.

**Course Typically Offered:** Spring

Credits: 3

### **MEE 394 - Mechanical Engineering Practice**

Full-time engineering work with companies participating in the Mechanical Engineering Department Cooperative Education Program. (Fall, Spring and Summer.)  
(Pass/Fail Grade Only.)

**Course Typically Offered:** Fall & Summer

Credits: 3

### **MEE 432 - Heat Transfer**

The fundamental laws of heat transfer by conduction, convection and radiation. Applied to the study of engineering problems via analytical, numerical, and graphical techniques. Rec 3. (Fall.)

**Prerequisites:** MAT 258 and MEE 360.

**Course Typically Offered:** Fall

Credits: 3

### **MEE 433 - Solar-Thermal Engineering**

Introduces solar energy collection and use as process thermal energy. Includes performance analysis of solar collectors and thermal energy storage devices both separately and as a combined system. Rec 3.

**Prerequisites:** A grade of C or better in MEE 230.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

## **MEE 434 - Thermodynamic Design of Engines**

Thermodynamic design of internal combustion engines to meet specified energy conversion requirements. Teaches the influence of fuel and air combustion on getting work output from the fuel's internal energy and the importance of engine breathing through valves and ports on getting desired power and torque outputs at specified operating conditions.

**Prerequisites:** MEE 231.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

## **MEE 442 - Mechanical Laboratory II**

A continuation of MEE 341. Mechanical engineering problems in a laboratory setting. (Fall) Lab 3.

**Prerequisites:** MEE 231, MEE 341 or permission.

**Course Typically Offered:** Fall

Credits: 2

## **MEE 443 - Mechanical Laboratory III**

A continuation of MEE 442. Mechanical engineering problems in a laboratory setting (Spring). Lab 3.

**Prerequisites:** MEE 231, MEE 341, MEE 442 or permission.

**Course Typically Offered:** Spring

Credits: 2

## **MEE 444 - Robot Dynamics and Control**

Review of geometries of robots, Cartesian, cylindrical, spherical, revolute, tensor and snake like robotic manipulators, robot drive systems, resolution, accuracy and repeatability, robotic laboratory set up, some existing computer based industrial robots, areas for robot applications, comparative cost of automation by robots and some robotics statistics. Review of kinematics design of robots, Denavit-Hartenberg transformation of position and orientation, Euler angles representations, roll, pitch and yaw, homogeneous transformations, D-H representations, kinematic equations for manipulators, end effector specifications, kinematics equations for Stanford, PUMA and Rhino XR-2 manipulators, solving kinematics equations by direct and inverse methods, singular and degenerate solutions, and kinematics characteristics of work space. Dynamics, design and control of robotic manipulators, position and speed control of robots, Newton-Euler dynamic modeling, Lagrangian dynamic modeling, Bond-graph

dynamic modeling, dynamic equations for some manipulators, recursive equations of motion, computational algorithms, robotic control theories, steady state servo control for manipulators, error controlled systems, some structural design considerations, voltage-torque conversion, open and closed loop control systems, feed back control of positional vibrations of manipulators and static and dynamic forces in robots.

**Prerequisites:** A grade of C or better in MEE 270; and MEE 380

**Course Typically Offered:** Fall & Spring

Credits: 3

### **MEE 445 - Aeronautics**

An introduction to dynamics and performance of aircraft flight. Topics include aerodynamics, wing theory, torques, stability and trim, propulsion, actuation and control.

**Prerequisites:** MAT 258, a grade of C or better in MEE 270, and either ECE177 or COS 220

**Course Typically Offered:** Fall, Even Years

Credits: 3

### **MEE 446 - Astronautics**

An introduction to the design and operation of spacecraft systems. Topics include kinematics and relative orientation of different coordinate systems, orbital mechanics, maneuvers and transfers, Rigid-body dynamics and propulsion concepts. Also, an introduction to GPS is provided.

**Prerequisites:** MAT 258, a grade of C or better in MEE 270, and either ECE 177 or COS 220

**Course Typically Offered:** Spring

Credits: 3

### **MEE 447 - Flight Dynamics, Modeling and Control of Aircraft and Space Vehicles**

Provides an introduction to the flight dynamics, modeling and fundamental control aspects of aerospace vehicles, including spacecraft and atmospheric vehicles.

**Prerequisites:** A grade of C or better in MEE 270, MAT 258, either COS 215 or COS220, MEE 445 or MEE 360, and MEE 446 or MEE 370 or MEE 444 - or permission.

**Course Typically Offered:** Fall

Credits: 3

### **MEE 450 - Mechanics of Composite Materials**

Introduction to the behavior of composite materials and their use in engineering structures; fabrication methods, behavior and properties of the constituent fibers and matrices, micromechanical predictions of composite properties, anisotropic elasticity, behavior of composite laminae, classical lamination theory, failure theories, composite beams and plates, material characterization and introduction to the design of composite structures.

**Prerequisites:** A grade of C or better in MEE 251

**Course Typically Offered:** Spring, Even Years

Credits: 3

### **MEE 453 - Experimental Mechanics**

Experimental methods and techniques for analysis of stress and displacement. Also covers electric strain gages, brittle lacquers, mechanical and optical strain gages, and introduction to photoelasticity. Rec 2, Lab 2.

**Prerequisites:** A grade of C or better in MEE 251.

**Course Typically Offered:** Spring

Credits: 3

### **MEE 455 - Advanced Strength of Materials**

Considers limitations of elementary stress formulas, theories of failure, unsymmetrical bending, beams, plates, torsion of non-circular bars, thick-walled cylinders, stress concentrations, energy methods. Introduces theory of elasticity. Rec 3.

**Prerequisites:** A grade of C or better in MEE 251.

**Course Typically Offered:** Fall

Credits: 3

### **MEE 456 - Introduction to the Finite Element Method**

An introduction to the finite element methods including matrix operations, interpolation functions, basic element types, and implementation to problems in mechanical engineering including simple structures, plane stress, heat transfer and fluid mechanics. Rec 3. (Spring.)

**Prerequisites:** MAT 258 and a grade of C or better in MEE 251.

**Course Typically Offered:** Spring

Credits: 3

## **MEE 462 - Fluid Mechanics II**

A continuation of MEE 360 including boundary-layer flows, inviscid incompressible flows, compressible flows and selected topics. Rec 3.

**Prerequisites:** MEE 360.

**Course Typically Offered:** Spring, Odd Years

Credits: 3

## **MEE 471 - Mechanical Vibrations**

Examines free and forced vibrations with viscous damping for discrete and continuous mass systems as well as derivation and application of energy methods. (Spring.) Rec 3.

**Prerequisites:** MAT 258 and a grade of C or better in MEE 270.

**Course Typically Offered:** Spring

Credits: 3

## **MEE 475 - Fuel Cell Science and Technology**

A study of the basic operating principles of fuel cells, the different types of fuel cells, fuel reforming and power conditioning, and the efficiency, performance and application of fuel cell systems. (This course is identical to MET 475.)

**Prerequisites:** MET 236 or MET 433 or a grade of C or better in MEE 230 or PHY 462; and CHY 121 or permission

**Course Typically Offered:** Spring

Credits: 3



## **MEE 480 - Wind Energy Engineering**

This course presents the theory and design of modern wind turbines. Theoretical aspects of the course cover the fundamentals of assessing the aerodynamic loads and efficiency of a wind turbine. Design procedures for wind turbines are outlined with an emphasis on maximizing performance, assuring structural integrity and minimizing the cost of energy. Current trends in offshore wind are also covered as well as the social and environmental issues of a burgeoning wind energy industry.

**Prerequisites:** MAT 258 and C or better in MEE 251.

**Corequisites:** CIE 350 or MEE 360.

**Course Typically Offered:** Spring, Even Years

Credits: 3

## **MEE 483 - Turbomachine Design**

Topics include: the theory and design of turbomachinery flow passages, control and performance of turbomachinery, gas-turbine engine processes. Rec 3.

**Prerequisites:** MEE 230, MEE 360

**Course Typically Offered:** Not Regularly Offered

Credits: 3

## **MEE 484 - Power Plant Design and Engineering**

A study of power station engineering and economy, including design, construction and operation theory of steam, internal-combustion, and hydroelectric power plants. Introduction to nuclear power plants, solar energy, fuel cells, and associated problems. Rec 3.

**Prerequisites:** Grade of C or better in MEE 230 and MEE 231

**Course Typically Offered:** Not Regularly Offered

Credits: 3

## **MEE 486 - Refrigeration and Air Conditioning System Design**

Examines methods of producing artificial low temperatures including refrigeration for controlled-temperature applications in comfort air conditioning and for industrial manufacturing processes. Rec 3.

**Prerequisites:** MEE 231.

**Course Typically Offered:** Fall, Even Years

Credits: 3

### **MEE 487 - Design III**

Design of mechanical engineering systems components, including problem definition, analysis, synthesis and optimization. Engineering ethics.

**General Education Requirements:** Satisfies the General Education Capstone Experience Requirement. Must be taken in series with MEE 488 to meet the Capstone Experience requirement. Neither course alone satisfies the requirement.

**Prerequisites:** MEE 231, MEE 381

**Corequisites:** MEE 432 or permission.

**Course Typically Offered:** Fall

Credits: 4

### **MEE 488 - Design IV**

Design of mechanical engineering systems, including problem definition, analysis, synthesis and optimization. (Spring.)

**General Education Requirements:** Satisfies the General Education Capstone Experience Requirement. Must be taken in series with MEE 487 to meet Capstone Experience requirement. Neither course alone satisfies the requirement.

**Prerequisites:** MEE 231, MEE 381, MEE 432.

**Corequisites:** ECP 488

**Course Typically Offered:** Spring

Credits: 4

### **MEE 489 - Offshore Floating System Design**

The course introduces the basics of naval architecture and offshore engineering design concepts to senior engineering students. A

broad introduction is provided on the topics of floating platform stability, structural strength, global performance, mooring systems and installation. Use of industry guest lecturers will complement regular lectures for the course. Emphasis is placed on applying recommended practices by regulatory bodies into hands-on design projects.

**Prerequisites:** MEE 360 and MEE 380 or Permission of Instructor.

**Course Typically Offered:** Fall, Even Years

Credits: 3

## **MEE 498 - Selected Topics in Mechanical Engineering**

Topics in mechanical engineering not regularly covered in other courses. Content varies to suit needs. May be repeated for credit, with departmental permission.

**Prerequisites:** permission.

**Course Typically Offered:** Fall & Spring

Credits: 1-3

## **MES 101 - Introduction to Maine Studies**

An interdisciplinary approach to the study of Maine through sources in history, literature, political science, Native American studies, Franco American studies, and other fields. The unifying theme is the significance of locality in understanding the interaction between the landscape and the people. How does the Maine landscape shape people's choices? How do the people use the state's landscape and resources? How do social, demographic, cultural, and environmental factors shape this relationship throughout history? The activities examined include farming, fishing, lobstering, and lumbering. How have commercial interests intersected with environmental concerns? The cultures considered include Native American, early Anglo settlers, later Irish and Franco immigrants, and more recent immigration and refugee communities.

**General Education Requirements:** Satisfies the General Education Population and the Environment and Writing Intensive Requirements.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

## **MES 201 - The Maine Coast**

Provides an interdisciplinary approach to the study of the culture and environment of the Maine coast. Uses sources in art, history, literature, economics, Native American studies, African American studies, and other fields. The unifying theme is the significance of locality in understanding the interaction between the Maine coast and the people. How has the coastal topography shaped human activity there? How have artists and writers helped construct the Maine coast in the popular imagination? How do

the people - both currently and in the past - use the state's coastal landscape and resources? How do social, demographic, cultural, and environmental factors shape this relationship throughout history? Examines industries such as granite, lime, fishing, shipping, ship building, and tourism, to explore how these commercial interests intersect with environmental concerns and link Maine to the global markets. Asks how further coastal development can be reconciled with the threat to the coast's fragile environment.

**General Education Requirements:** Satisfies the General Education Population and the Environment, Social Contexts and Institutions, and Writing Intensive Requirements.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **MES 301 - Rachel Carson, Maine, and the Environment**

In this course, students will take a chronological approach to the study of Rachel Carson's life and work, reading her books in the order in which they were written, with attention to the role of "place," specifically the Maine coast, in fostering her achievement as a nature writer and in shaping her vision as an environmentalist. Some of the questions the course will pose and attempt to answer are: what role did the Maine coast play in enabling Carson to understand the importance of the conservation of "wild" spaces? In what ways did Carson's experience of the Maine coast contribute to her knowledge and understanding of the sea - a central theme in her work - in all its physical and metaphorical dimensions? And how did Carson's establishment of a permanent home on the coast of Maine facilitate her development as a science and nature writer?

**General Education Requirements:** Satisfies the General Education Population and the Environment and Writing Intensive Requirements.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **MES 498 - Advanced Topics in Maine Studies**

An advanced, interdisciplinary study of Maine Studies topics. May be taken more than once for degree credit if the topic differs. (This course is identical to MES 520.)

**Prerequisites:** Junior or Senior standing or permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1-3

### **MET 100 - Introduction to Mechanical Engineering Technology**

Students will cover topics relevant to succeeding as a MET student and graduate. Lec 1, Lab 2. (Fall.)

**Course Typically Offered:** Fall

Credits: 2

### **MET 107 - Machine Tool Laboratory I**

Theory and application of fundamental metal removing processes and basic metrology and tool nomenclature. Light machine work using drill presses, lathes, milling machines and surface grinders. Lec 1, Lab 3. (Spring.)

**Prerequisites:** MET 121 and MAT 122 and Mechanical Engineering Technology Majors or permission

**Course Typically Offered:** Fall & Spring

Credits: 3

### **MET 121 - Technical Drawing**

An introduction to graphic symbols utilizing both manual and CADD skills applied to engineering drawings. Topics include: lettering, geometric construction, multiview drawing, sections, dimensioning and assembly drawing. Lec 2, Lab 2. (Fall and Spring.)

**Prerequisites:** Mechanical Engineering Technology majors

**Course Typically Offered:** Fall & Spring

Credits: 3

### **MET 126 - Machine Drawing**

Preparation of complete working drawings of a project for MET 213. Topics include: pictorial drawings, descriptive geometry, CADD, design process, dimensioning, tolerancing, fasteners, details, and assembly drawings. Lec and Lab 4. (Spring.)

**Prerequisites:** MET 121.

**Corequisites:** MET 107.

**Course Typically Offered:** Spring

Credits: 3

### **MET 150 - Statics**

The study of forces acting on particles and rigid bodies in equilibrium, trusses, centroids and centers of gravity, properties of area, friction. Lec 3. (Spring.)

**Prerequisites:** MET 121 and PHY 107 and MAT 122

**Course Typically Offered:** Spring

Credits: 3

### **MET 213 - Introduction to CAM**

Introduction to advanced computer aided design and computer aided manufacturing. Covers programming and operation of computer numerical control machine tools.

**Prerequisites:** MET 107 and MET 121, or permission.

**Course Typically Offered:** Spring

Credits: 2

### **MET 219 - Strength of Materials**

An introduction to machine design. A study of stress and strain in materials and bodies subjected to tension, compression, torsion and flexure as well as deflection of prismatic members, columns, combined stresses. Lec 4. (Fall.)

**Prerequisites:** MET 150.

**Corequisites:** TME 253

**Course Typically Offered:** Fall

Credits: 4

### **MET 220 - Selected Topics in Mechanical Engineering Technology I**

Topics in engineering technology not regularly covered in other courses. Content varies to suit the needs of individuals. May be repeated for credit. (Fall and Spring.)

**Prerequisites:** permission.

**Course Typically Offered:** Fall & Spring

Credits: 1-3

## **MET 233 - Thermal Science**

A study of elementary thermodynamics including engineering calculations relative to heat, power, work and mechanical and electrical energy. Rec 3. (Fall.)

**Prerequisites:** PHY 108 or PHY 112 or PHY 122

**Corequisites:** TME 152 or MAT 126

**Course Typically Offered:** Fall

Credits: 3

## **MET 234 - Mechanical Technology Laboratory I**

Experimental application of solid and fluid mechanics, and thermodynamics. Covers calibration of laboratory instruments. Rec 1, Lab 2. (Spring.)

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** MET 219 and MET 233.

**Course Typically Offered:** Spring

Credits: 3

## **MET 236 - Thermal Applications**

Applications of fundamentals studied in MET 233 including steam and gas cycles, analysis of cycle components, steam generators, pumps, turbines, compressors, heat transfer and refrigeration systems. Rec 3. (Spring.)

**Prerequisites:** MET 233.

**Course Typically Offered:** Spring

Credits: 3

## **MET 270 - Manufacturing Technology**

Examines materials and processes for manufacturing consumer and producer goods. Technologies include metal casting,

plastics/ceramics/composites processing, and metal forging and extrusion. Includes supporting topics in materials selection, quality control and the manufacturing enterprise. Evening tours of manufacturing facilities may be scheduled.

**Prerequisites:** MET 121 and sophomore standing.

**Course Typically Offered:** Fall

Credits: 3

## **MET 312 - Machine Tool Processing II**

Manufacture and evaluation of prototype assembly, including redesign of components as needed.

**Prerequisites:** MET 107 and MET 126

**Course Typically Offered:** Fall

Credits: 3

## **MET 313 - CAD / CAM Projects**

Student create 2-D and 3-D CAD drawings of machined parts, create process and setup sheets for the parts, use CAD/CAM software to develop CNC programs for the parts, and use CNC machine tools to fabricate the parts. Rec. 1, Lab. 3.

**Prerequisites:** MET 107 and MET 213.

**Course Typically Offered:** Variable

Credits: 3

## **MET 317 - Dynamics**

A study of kinematics and kinetics of particles, including conservation of energy, conservation of momentum and impulse. Also kinematics of rigid bodies including linkages, gears and gear trains. (Fall.)

**Prerequisites:** MET 150 or CET 413 and TME 253 or MAT 127.

**Course Typically Offered:** Fall

Credits: 4

## **MET 320 - Selected Topics in Mechanical Engineering Technology II**



Topics in engineering technology not regularly covered in other courses. Content varies to suit the needs of individuals. May be repeated for credit. (Fall and Spring.)

**Prerequisites:** permission.

**Course Typically Offered:** Fall & Spring

Credits: 1-3

### **MET 321 - Industrial Vibrations**

An introduction to applications of vibration theory in industrial design, measurement of vibrations in industrial settings, and industrial noise control principles. Lec and Lab 3.

**Corequisites:** MET 317

**Course Typically Offered:** Variable

Credits: 3

### **MET 325 - Fluid Flow Technology**

Examines fluid statics, dynamics and energy as well as flow measuring devices, fluid components and systems. Rec 3. (Spring.)

**Prerequisites:** MET 236, MET 317 and TME 253.

**Course Typically Offered:** Spring

Credits: 3

### **MET 327 - Automotive Engineering**

An introduction to the analysis of automotive powertrains and related vehicle systems. The theory and design of internal combustion engines, as well as contemporary automotive power delivery systems are covered. Lec and Lab 3.

**Prerequisites:** MET 236 or MET 433 and Electrical Engineering Technology or Mechanical Engineering Technology majors with junior or senior standing or permission.

**Course Typically Offered:** Variable

Credits: 3

## **MET 355 - Engineering Materials**

The study of the composition and behavior of materials used in engineering. Materials covered include metals, plastics, wood, ceramics, and concrete. The laboratory demonstrates the effect of heat treatment on the mechanical properties of steels. Rec 2, Lab 2. (Spring.)

**Prerequisites:** CHY 121, MET 219, MET 234, Mechanical Engineering Technology major with junior standing.

**Course Typically Offered:** Spring

Credits: 3

## **MET 362 - Power Transmission and Control**

Covers fluid power theory and fundamentals, circuit analysis for hydraulic and pneumatic systems, mechanical and electro-mechanical power transmission design. Selection and design of componentry for control of load. (This course is identical to BLE 462.)

**Prerequisites:** Junior or Senior standing or permission.

**Course Typically Offered:** Fall

Credits: 3

## **MET 391 - Heating, Ventilating and Air Conditioning**

Determination of heating, ventilating and air conditioning loads for buildings and industrial processes. Heat transfer devices and applications to systems. Refrigeration for controlled-temperature applications. Heating, ventilating and air conditioning system layout and control systems. Rec 3. (Spring.)

**Corequisites:** MET 236.

**Course Typically Offered:** Variable

Credits: 3

## **MET 394 - Mechanical Engineering Technology Practice**

Cooperative work experience in mechanical engineering technology at full-time employment for at least a ten-week period. (Fall, Spring and Summer.)  
(Pass/Fail Grade Only.)

**Prerequisites:** MET 234, MET 236; junior standing or permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **MET 427 - Energy Management**

Examination and analysis of a variety of commercial and domestic systems in order to determine energy conservation opportunities. The concept of energy management as a method to minimize costs or maximize profits will be studied. Builds on the fundamentals of thermodynamics, fluid mechanics and economics. Lec 3.

**Prerequisites:** MET 325.

**Course Typically Offered:** Variable

Credits: 3

### **MET 433 - Thermodynamics**

A study of thermodynamic concepts, properties and applications, including work, heat, energy, entropy, First and Second Laws, processes, cycles and systems. Rec 3. (Fall)

**Prerequisites:** PHY 108 or PHY 112 or PHY 122 and TME 253 or MAT 127

**Course Typically Offered:** Fall

Credits: 3

### **MET 452 - Advanced Fluid Power**

Examines the design of pneumatic and hydraulic circuits, control theory applied to fluid power actuated mechanical systems, data acquisition, transducers, computer interfacing, and programming for control. Laboratory work includes design and test of fluid power systems including programming the motion of cylinders and motors using PLC's and personal computers. Rec 2, Lab 3.

**Prerequisites:** BLE 462 or MET 362 or permission.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **MET 462 - Design I**

Analysis of mechanical elements as well as applications of mechanics of materials, stress concentration, combined stresses, fatigue, and factor of safety to the design of machine components. Lec 3. (Fall.)

**General Education Requirements:** Satisfies the General Education Capstone Experience Requirement when combined with the successful completion of MET 463, MET 464 and MET 465.

**Prerequisites:** MET 219

**Course Typically Offered:** Fall

Credits: 3

## **MET 463 - Design II**

Continuation of MET 462 including drive components, welded connections, lubrication, bearings, gearing, miscellaneous machine elements and engineering materials. Lec 3. (Spring)

**General Education Requirements:** Satisfies the General Education Capstone Experience Requirement when combined with the successful completion of MET 462, MET 464 and MET 465.

**Prerequisites:** MET 462.

**Course Typically Offered:** Spring

Credits: 3

## **MET 464 - Senior Design Project I**

The first of a two-course sequence providing MET seniors with a capstone learning experience. Components include project definition, research, safety, benchmarking, ergonomics, engineering analysis, and preparation of design drawings and a project presentation. Design of a capstone design project. Rec 3. (Fall.)

**General Education Requirements:** Satisfies the General Education Capstone Experience Requirement when combined with the successful completion of MET 462, MET 463 and MET 465.

**Prerequisites:** MET 219; senior standing or permission.

**Corequisites:** MET 462

**Course Typically Offered:** Fall

Credits: 2

## **MET 465 - Senior Design Project II**

Continuation of MET 464. Components include team project management, building a prototype, testing and refining the design, and making a final design presentation. Rec 3. (Spring.)

**General Education Requirements:** Satisfies the General Education Capstone Experience when combined with the successful completion of MET 462, MET 463 and MET 464.

**Prerequisites:** MET 464.

**Corequisites:** MET 463

**Course Typically Offered:** Spring

Credits: 2

### **MET 475 - Fuel Cell Science and Technology**

A study of the basic operating principles of fuel cells, the different types of fuel cells, fuel reforming and power conditioning, and the efficiency, performance and application of fuel cell systems. (This course is identical to MEE 475.)

**Prerequisites:** MET 236 or MET 433 or a grade of C or better in MEE 230 or PHY 462; and CHY 121 or permission

**Course Typically Offered:** Spring

Credits: 3

### **MET 484 - Engineering Economics**

A study of economic theory and applications in engineering and industrial organizations including capitalization, amortization, time value of money, cost comparison analysis and breakeven value. Also included are personal finance topics as applied to engineering situations and case study. Lec 3.

**Prerequisites:** Senior standing in School of Engineering Technology.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **MLC 175 - Multiculturalism in America**

A multidisciplinary course that investigates the nature of "American" identity through readings and essay writing, video and debate.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives

Requirement.

**Course Typically Offered:** Spring, Summer

Credits: 3

### **MLC 190 - Topics in Modern Languages**

Specific topics determined by current interests of students and staff. May be repeated for credit if different topic is taken.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **MLC 231 - Western Tradition in Literature: Homer Through the Renaissance**

Survey of the major writers in the Western literary tradition. The development of our cultural heritage and the evolution of major literary forms. (This course is identical to ENG 231.)

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Artistic and Creative Expression Requirements.

**Prerequisites:** 3 hours of English.

**Course Typically Offered:** Variable

Credits: 3

### **MLC 293 - Study Abroad**

Permits the granting of foreign language credit for courses taken abroad with no exact University of Maine catalog equivalent. May be repeated for credit.

**Course Typically Offered:** Variable

Credits: 1-6

### **MLC 421 - World Cinema: Multiple Perspectives on Identity and Culture**

Cultural differences often lead to misunderstanding, conflict, and comical situations. Analysis of varying world views will be contextualized within discussion of national cinema and its interconnectedness to the political and socio-cultural makeup of a given country.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and Artistic and Creative Expression Requirements.

**Prerequisites:** ENG 280, HTY 218, or permission of instructor.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **MLC 466 - The Teaching of Modern Languages**

Includes analysis of current trends and methods, application of language learning principles to classroom procedures, theory and practice of language methodologies at different learning levels, use of technologies such as video and computers in the instructional process. For students seeking certification in foreign language teaching.

**Course Typically Offered:** Fall & Summer

Credits: 3

### **MLC 490 - Topics in Modern Languages**

Specific topics vary from semester to semester. May be repeated for credit.

**Prerequisites:** permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1-3

### **MLC 493 - Study Abroad**

Permits the granting of foreign language credit for courses taken abroad with no exact University of Maine catalog equivalent. May be repeated for credit.

**Course Typically Offered:** Variable

Credits: 1-6

## **MLC 495 - Senior Project in Modern Languages**

Capstone Experience in which majors in Latin or Classical Studies (offered through the Interdisciplinary BA) apply language skills and cultural knowledge gained from all prior study. Students work closely with faculty advisor on approved project. Students give public presentation of the project in English. The coursework will reflect the work of three credit hours, regardless of the number of credits taken.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives, Western Cultural Traditions and Capstone Experience Requirements.

**Prerequisites:** senior standing and permission.

**Course Typically Offered:** Variable

Credits: 1-3

## **MLC 496 - Field Work in Modern Languages**

Supervised work in either the public or the private sector which is relevant to the study and use of a modern language. Requirements include an initial proposal which shows the relevance of the work experience to the student's program in modern languages and a final report or paper.

**Prerequisites:** an appropriate level of fluency as determined by the department.

**Course Typically Offered:** Variable

Credits: 1 - 12

## **MLC 566 - The Teaching of Modern Languages**

Includes current trends and methods in world language instruction, application of second language acquisition principles to classroom procedures, interplay of theory and practice at different proficiency levels, uses of technology in instructional process. For individuals seeking world language teaching (re)certification.

**Prerequisites:** Permission.

**Course Typically Offered:** Fall & Summer

Credits: 3

## **MLC 598 - Topics in Modern Languages**



Topics in Modern Languages

**Prerequisites:** Permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **MSE 395 - Practicum in Museum Education**

Field experience in a museum setting. Provides an opportunity for students to further develop and apply their knowledge of museum education theory and practice in a museum setting.

**Prerequisites:** MSE 200 or permission.

**Course Typically Offered:** Fall

Credits: 3 - 6

### **MSE 396 - Internship**

Students do a semester internship at a local or regional institution. Institutions are matched to the individual student's specific interests and field of study. May be repeated for credit.

**Prerequisites:** MSE 200 or permission of instructor.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **MSE 497 - Independent Study in Museum Studies/Museum Education**

Advanced independent study or research and writing projects in Museum Studies, Museum Education or related areas. May be repeated for credit.

**Prerequisites:** MSE 200 or permission of instructor.

**Course Typically Offered:** Fall & Spring

Credits: 1-3

## **MSE 498 - Directed Study in Museum Studies/Museum Education**

Advanced directed study or research and writing projects in Museum Studies, Museum Education or related areas. May be repeated for credit.

**Prerequisites:** MSE 200 or permission of instructor.

**Course Typically Offered:** Spring

Credits: 1-3

## **MSL 100 - Leadership Laboratory**

Available only to students enrolled/contracted in the ROTC program. Cadets develop and improve military leadership skills by participating in hands on training. Includes continuous counseling and periodic evaluations of cadet performance. In case of class conflicts, an alternate leadership lab can be arranged with the permission of the Military Science Department Chairperson. (Pass/Fail Grade Only.)

**Course Typically Offered:** Fall & Spring

Credits: 0

## **MSL 101 - Foundations of Officership**

Introduces students to issues and competencies that are central to a commissioned officer's responsibilities. Establish framework for understanding officership, leadership, and Army values followed and life skills such as physical fitness and time management. No military obligation associated with this course.

**Corequisites:** MSL 100

**Course Typically Offered:** Fall & Spring

Credits: 1

## **MSL 102 - Basic Leadership**

Establishes foundation of basic leadership fundamentals such as problem solving, communications, briefings and effective writing goal setting, techniques for improving listening and speaking skills and all introduction to counseling. No military obligation associated with this course.

**Corequisites:** MSL 100

**Course Typically Offered:** Spring

Credits: 1

### **MSL 105 - Leadership and Physical Fitness**

A study of the United States Army physical fitness program, including aerobic exercises and strength-building programs, which provide actual leadership and fitness opportunities. Emphasis on the importance of exercise and fitness to the individual and development of a personalized training program.

(Pass/Fail Grade Only.)

**Corequisites:** MSL 100

**Course Typically Offered:** Fall & Spring

Credits: 1

### **MSL 201 - Individual Leadership Studies**

Students identify successful leadership characteristics through observation of others and self through experimental learning exercises. Students record observed traits in a dimensional leadership journal and discuss observations in small group settings. No military obligation associated with this course.

**Corequisites:** MSL 100

**Course Typically Offered:** Fall & Spring

Credits: 2

### **MSL 202 - Leadership and Teamwork**

Study examines how to build successful teams, various methods for influencing action, effective communication in setting and achieving goals, the importance of timing the decision, creativity in the problem solving process, and obtaining team buy-in through immediate feedback. No military obligation associated with this course.

**Corequisites:** MSL 100

**Course Typically Offered:** Spring

Credits: 2

### **MSL 301 - Adaptive Team Leadership**

In this course, students will study, practice, and apply the fundamentals of Army leadership, Officership, Army values and ethics, personal development, and small unit tactics at the team and squad level. At the conclusion of this course, you will be capable of planning, coordinating, navigating, motivating and leading a team of squad in the execution of a tactical mission during a classroom practical exercise (PE), a Leadership Lab, or during a Situational Training Exercise (STX) in a field environment.

**General Education Requirements:** Satisfies the General Education Western Cultural Traditional Requirement

**Prerequisites:** Permission

**Corequisites:** MSL 100.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **MSL 302 - Applied Team Leadership**

In this course, students will study, practice, and apply the fundamentals of Army leadership, Officership, Army values and ethics, personal development, and small unit tactics at the team and squad level. This course includes reading assignments, homework assignments, small group assignments, briefings, case studies, and practical exercises, a mid-term. At the conclusion of this course, students will be capable of planning, coordinating, navigating, motivating and leading a team or squad in the execution of a tactical mission during a classroom exercise (PE), a Leadership Lab, or during a Situational Training Exercise (STX) in a field environment.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives and Ethics requirements.

**Prerequisites:** Permission

**Corequisites:** MSL 100

**Course Typically Offered:** Spring

Credits: 3

### **MSL 350 - The Evolution of American Warfare**

Historical analysis of American theory of warfare from colonial period through Operation Desert Storm and the applications of Force XXI. Social, economic and political influences are examined, tracing the evolution of the American military; the development of a global military strategy, imprint of the social fabric of the nation on the military as the United States evolved into a world power. Additionally, the student will examine the effects of institutions on organization structures. Technology and the practice of warfare is emphasized. Lec 3.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Social Contexts and Institutions Requirements.

**Corequisites:** MSL 100

**Course Typically Offered:** Fall & Spring

Credits: 3

### **MSL 390 - Cultural Understanding and Language Proficiency**

The course is a 30 day, deployment that has a mission that supports the United States Embassy's strategic plan for that particular country. Many of these missions are performed in VERY austere conditions that include unusual living conditions, foods, and risks of common traveler's illnesses. However, during these missions, students receive an educational experience unmatched by anything you will do in a college classroom.

**General Education Requirements:** Cultural Diversity or International Perspectives

**Prerequisites:** By permission of the Professor of Military Science.

**Course Typically Offered:** Summer

### **MSL 401 - Mission Command and the Army Profession**

This course transitions the focus of student learning from being trained, mentored and evaluated as an MSL III Cadet to learning how to train, mentor and evaluate underclass Cadets. The course places substantial emphasis on discussion of ethical issues, writing competency, and the Army as an institution. MSL IV Cadets learn the duties and responsibilities of an Army staff officer and apply the Military Decision Making Process, Army Writing Style, and the Army's Training Management processes during weekly Training Meetings to plan, execute and assess battalion training events. Cadets learn to safely conduct training by understanding and employing the Risk Management Process. Cadets learn how to use the Comprehensive Soldier Fitness (CSF) program to reduce and manage stress.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions, Ethics and Writing Intensive requirements.

**Prerequisites:** MSL 302 or permission.

**Corequisites:** MSL100

**Course Typically Offered:** Fall

Credits: 4

### **MSL 402 - Mission Command and the Company Grade Officer**

This course explores the dynamics of leading in complex situations. Significant emphasis is placed on culture and cultural awareness, as well as how culture influences the operational environment. The course also continues to investigate the Army as

an institution, how it works both internally and it interacts and affects the operational environment.

**General Education Requirements:** Satisfies the General Education Cultural Diversity or International Perspectives and Social Contexts and Institutions Requirements.

**Prerequisites:** MSL 401 or permission.

**Corequisites:** MSL 100

**Course Typically Offered:** Spring

Credits: 4

### **MSL 410 - Cadet Troop Leader Training**

Course provides Cadets the opportunity to experience leadership in Army Table of Organization and equipment (TO& E) units throughout the Army over a three to four week period during the summer following the junior year. Cadets serve in lieutenant-level leadership positions in active-duty units around the world. Cadets must compete to be nominated by Cadre to participate in the program. Cadet Troop Leader Training is a follow-on training experience upon completion of the Cadet Leaders Course at Fort Knox, Kentucky during the summer between the Cadets' junior and senior years.

**General Education Requirements:** Satisfies the General Education Social Context & Institutions requirement.

**Prerequisites:** By Permission of the department of Military Science and Leadership. Requirements include: Must be a contracted Cadet, who has completed the Basic Course Requirements of Army ROTC (either MSL 101, MSL 102, MSL 201, and MSL 202, or Cadet Initial Entry Training, or the US Army Basic Training Course); have completed MSL 301 and MSL 302 and the 30 day Cadet Leaders Course.

**Course Typically Offered:** Summer

Credits: 3

### **MSL 420 - Cadet Leadership Course**

Course is a 30 day, scenario driven, training event focused on solving complex problems at the company-level. CLC builds upon work accomplished on campus and develops the student's small unit leadership ability in a tactical environment. Two part course. Part 1, focus on leadership tasks and simple tactics. Part 2, is a 5-7 day leadership challenge that will take place in a military setting in a field environment. The final evaluation will be informed by peer evaluations. Students will not be evaluated against a specific task standard but instead the instructors will assess their leadership traits in comparison to their peers and potential to perform in the Army. Class is 30 continuous days (24 hours a day, 7 days a week) in duration.

**Prerequisites:** By Permission of the Professor of Military Science.

**Course Typically Offered:** Summer

Credits: 3

## **MSL 498 - Investigations in Leadership and Mission Command**

This course enables a student who has already received a minor in Military Science to continue their education in leadership.

**Prerequisites:** Prerequisites: By permission of the Professor of Military Science.

**Course Typically Offered:** Summer

Credits: 3

## **MUE 207 - Voice Class**

The systematic development of the principles of good singing through class method approach. Lab 2.

**Prerequisites:** Music Education major or permission.

**Course Typically Offered:** Fall

Credits: 1

## **MUE 209 - String Class**

Basic performance and pedagogical skills pertaining to each of the four string instruments. Lab 4.

**Prerequisites:** Music Education major or permission.

**Course Typically Offered:** Fall

Credits: 2

## **MUE 210 - Introduction to Music Education**

Provides exposure to music classrooms, primary and secondary. Covers philosophies of music education, programming and evaluation. Fingerprinting required for field experience component of this course.

**General Education Requirements:** Satisfies the General Education Ethics Requirement

**Prerequisites:** Open to all music majors.

**Course Typically Offered:** Fall

Credits: 3

### **MUE 213 - Woodwinds I**

First semester of a required two-semester course dealing with woodwind instrument pedagogy. Covers clarinet, saxophone and introduction to flute.

**Prerequisites:** Music Education major or permission.

**Course Typically Offered:** Fall

Credits: 1

### **MUE 214 - Woodwinds II**

Second semester of a required two-semester course dealing with woodwind instrument pedagogy. Covers flute, oboe and bassoon. Lab 2.

**Prerequisites:** MUE 213, Music Education major or permission.

**Course Typically Offered:** Spring

Credits: 1

### **MUE 217 - Brass Class**

Basic performance and pedagogical skills pertaining to the brass instruments. Lab 4.

**Prerequisites:** Music Education major or permission.

**Course Typically Offered:** Spring

Credits: 2

### **MUE 222 - Percussion Class**

Basic performance and pedagogical skills pertaining to the percussion instruments. Lab 4.

**Prerequisites:** Music Education major or permission.



**Course Typically Offered:** Spring

Credits: 2

### **MUE 320 - Teaching of General Music: Elementary**

Methods, materials, organization and administration of the K-6 classroom music curriculum. Includes classroom instruments, field experiences, materials and methods for gifted and talented and the special learner.

**Prerequisites:** MUL 202 and MUY 212.

**Course Typically Offered:** Fall

Credits: 3

### **MUE 321 - Teaching of General Music: Secondary**

Methods, materials, organization and administration of the 6-12 classroom music curriculum. Includes classroom instruments, field experiences, materials and methods for gifted and talented and the special learner.

**Prerequisites:** MUE 320, MUL 202 and MUY 212.

**Course Typically Offered:** Spring

Credits: 3

### **MUE 400 - Choral Music Education**

The organization and development of techniques requisite to a successful choral program.

**Prerequisites:** Music majors only.

**Course Typically Offered:** Fall

Credits: 3

### **MUE 401 - Organization and Development of the Instrumental Music Program**

Covers instrumental organizations, review and application of instrumental pedagogy skills in laboratory settings.

**Prerequisites:** MUE 209, MUE 213, MUE 217, MUE 222 and MUP 345.

**Course Typically Offered:** Fall

Credits: 3

### **MUE 403 - Instrumental Laboratory**

Performance on secondary instruments in a heterogeneous setting. Required for those enrolled in MUE 401 but may be taken separately. Instrumental majors must attend Instrumental Laboratory for two of the three fall semesters following their first-year student year. Lab 1. Offered every fall.

**Prerequisites:** Music Education majors with sophomore standing.

**Course Typically Offered:** Fall

Credits: 1

### **MUH 201 - History of Western Music I**

The history of music from antiquity to approximately 1750 with a technical study of the significant musical trends.

**General Education Requirements:** Satisfies the General Education Writing Intensive requirement.

**Prerequisites:** Music major and MUL202 or permission of instructor.

**Course Typically Offered:** Fall

Credits: 2

### **MUH 202 - History of Western Music II**

The history of music from 1750 to the present day with a technical study of the significant musical trends.

**Prerequisites:** MUL 200 and MUL 202 or permission.

**Course Typically Offered:** Spring

Credits: 2

### **MUL 101 - The Art of Listening to Music: Elements**

Designed for the student with no previous experience in music. Provides a working vocabulary of terms and listening experiences intended to expand the basic understanding of the art form.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

## **MUL 120 - World Music**

Survey of the music cultures of the non-Western world considered as an integral part of their respective cultures, as reflected in history, religion, philosophy, theater and dance. No previous training in music is required.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirements.

**Course Typically Offered:** Spring

Credits: 3

## **MUL 150 - Rock'n Roll and other 20th Century Music**

Designed for students with no previous experience in music. Studies the precursors of Rock'n Roll such as ragtime, jazz, country and blues. Discusses how this music reflected and changed American and world cultures. Also examines other music that branched out of western music in the late twentieth century.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Course Typically Offered:** Variable

Credits: 3

## **MUL 200 - Music Literature Laboratory**

Introduction to music research, academic writing in music, digital music, and world music. Extensive use of electronic information retrieval systems. Usually taken in first year to develop computer proficiency.

**Prerequisites:** Music majors only.

**Course Typically Offered:** Fall & Spring

Credits: 1

## **MUL 202 - The Art of Listening to Music: Historical Survey**

Designed for the student with some previous experience in music. Primarily an historical survey of music from 1600 to the present, with some attention to musical terms and listening experiences. Music listening assignments to be completed in Fogler Library.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition Requirement.

**Prerequisites:** MUL 101 or permission.

**Course Typically Offered:** Fall

Credits: 3

## **MUO 101 - University Singers**

Rehearsal and performance of choral concert repertoire. Extended concert tours. Five hours of rehearsal a week. Attendance at all rehearsals and public performances required. May be repeated for credit. Lab 5.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Prerequisites:** audition (requires sight reading ability).

**Course Typically Offered:** Fall & Spring

Credits: 0-1

## **MUO 103 - Oratorio Society**

Rehearsal and performance of major choral works. Attendance at all rehearsals and public performances required. May be repeated for credit. You must sign up for 1 credit if you want to receive credit towards general education requirements. Audition required.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression requirement.

**Prerequisites:** Permission via an audition. Must sign up for the credit bearing section to receive credit towards general education requirements.

**Course Typically Offered:** Fall & Spring

Credits: 0-1

## **MUO 109 - Collegiate Chorale**

Rehearsal and performance of choral music appropriate for choral singers with limited background and training. No audition required; open to all students. Attendance at all rehearsals and public performances required. May be repeated for credit. Lab 2.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Course Typically Offered:** Fall & Spring

Credits: 0-1

## **MUO 111 - Marching Band**

Performs at home and occasional off-campus football games. Course begins four days prior to opening of classes. Rehearsal of concert music on limited schedule during final weeks of semester. Attendance required at rehearsals and performances. May be repeated for credit. Lab 4. (Fall semester only.)

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Prerequisites:** permission.

**Course Typically Offered:** Fall

Credits: 0-1

## **MUO 112 - Concert Band**

Rehearsal and performance (on and off campus) of a variety of concert band literature appropriate for the general University instrumentalist. Attendance required at rehearsals and performances. May be repeated for credit. Lab 3. (Spring semester only.)

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Prerequisites:** permission.

**Course Typically Offered:** Spring

Credits: 0-1

## **MUO 113 - Pep Band**

Rehearsal and performance of band music appropriate for athletic events including current marching band selections. Attendance required at rehearsals and performances. May be repeated for credit. Lab 2.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Prerequisites:** permission.

**Course Typically Offered:** Fall & Spring

Credits: 0-1

### **MUO 114 - Symphonic Band**

Rehearsal and performance of the most challenging and significant band literature. Attendance required at rehearsals and performances. Occasional touring on class days. May be repeated for credit. Lab 3.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Prerequisites:** audition.

**Course Typically Offered:** Fall & Spring

Credits: 0-1

### **MUO 121 - University Orchestra**

Rehearsal and performance of standard orchestral repertoire. Attendance at all rehearsals and public performances required. May be repeated for credit. Lab 4.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Prerequisites:** audition.

**Course Typically Offered:** Fall & Spring

Credits: 0-1

### **MUO 132 - Opera Workshop**

Rehearsal and performance of standard opera repertory. May be repeated for credit. Lab 3.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Prerequisites:** audition.

**Course Typically Offered:** Fall & Spring

Credits: 0-1

### **MUO 141 - Brass Ensemble**

The study and performance of chamber music for brass instruments. May be repeated for credit.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression requirement.

**Prerequisites:** Audition required. Must sign up for the credit bearing section to receive credit towards general education requirements.

**Course Typically Offered:** Fall & Spring

Credits: 0-1

### **MUO 143 - UMAINE Jazz Ensemble**

Rehearsal and performance of music for the large (16-24) jazz ensemble. Membership through audition. Attendance at all rehearsals and performances required. May be repeated for credit. Lab 3.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Course Typically Offered:** Fall & Spring

Credits: 0-1

### **MUO 149 - Chamber Music**

The study and performance of chamber music. May be repeated for credit. Lab 2.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Prerequisites:** permission of instructor.

**Course Typically Offered:** Fall & Spring

Credits: 0-1

## **MUO 150 - Percussion Ensemble**

Performs chamber music composed primarily for percussion instruments. May be repeated for credit. Lab 2.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression requirement.

**Prerequisites:** Percussion performance experience (i.e. snare drum or keyboard percussion or timpani) and the ability to read music; permission of instructor. Must sign up for the credit bearing section to receive credit towards general education requirements.

**Course Typically Offered:** Fall & Spring

Credits: 0-1

## **MUO 155 - Chamber Jazz Ensemble**

The rehearsal and performance of music for the Chamber Jazz Ensemble, that is, a small group consisting of one or several pitched instruments in "C," "Bb", "Eb", or "C bass clef" only , capable of a full chromatic scale with keyboard accompaniment (keyboardists must bring their own ) for participation in the course. Vocalists as well, who elect the ensemble, will need to play a pitched musical instrument that meets the criteria outlined above. Attendance at all rehearsals and public performances required. In addition, memorization of 4-8 works from the standard jazz repertory will be required. May be repeated for credit. Lab 2.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Prerequisites:** Permission of instructor.

**Course Typically Offered:** Fall & Spring

Credits: 0-1

## **MUO 160 - Black Bear Men's Chorus**

Rehearsal and performance of men's choral repertoire. Ensemble with members from campus and community. Short audition used for placement within the ensemble only. Attendance at all rehearsals and public performances required. May be repeated for credit.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Course Typically Offered:** Fall & Spring

Credits: 0-1

## **MUO 165 - Athena Consort**



Rehearsal and performance of women's choral repertoire. Auditioned ensemble with members from campus and community. Attendance at all rehearsals and public performances required. May be repeated for credit.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Course Typically Offered:** Fall & Spring

Credits: 0-1

### **MUP 205 - Piano Class I**

Designed to provide a basic command of the keyboard. Recommended especially for students preparing to take the proficiency examination in secondary piano. May be taken as an introduction to piano performance for the beginning student. Lab 2.

**Prerequisites:** Music majors only.

**Course Typically Offered:** Fall

Credits: 1

### **MUP 206 - Piano Class II**

A continuation of MUP 205, designed to provide basic command of the keyboard. Lab 2.

**Prerequisites:** Music majors only.

**Course Typically Offered:** Spring

Credits: 1

### **MUP 215 - Piano Class I**

A continuation of MUP 205, MUP 206 designed to complete the proficiency examination in secondary piano. Lab 2.

**Prerequisites:** MUP 205, MUP 206 or permission. Music majors only.

**Course Typically Offered:** Fall

Credits: 1

### **MUP 216 - Piano Class II**

A continuation of MUP 205, MUP 206 designed to complete the proficiency examination in secondary piano. Lab 2.

**Prerequisites:** MUP 205, MUP 206 or permission. Music majors only.

**Course Typically Offered:** Spring

Credits: 1

### **MUP 251 - Collaborative Piano**

The study of Collaborative Techniques, vocal and instrumental, with emphasis on developing sight reading, listening skills and stylistic awareness.

**Prerequisites:** Required of all piano majors and open to other advanced pianists, by permission.

**Course Typically Offered:** Not Regularly Offered

Credits: 1

### **MUP 252 - Accompanying II**

A continuation of MUP 251 with emphasis on learning repertoire. Includes lab work with soloists. Lab 2.

**Prerequisites:** MUP 251. Required of all piano majors and open to other advanced pianists, by permission.

**Course Typically Offered:** Not Regularly Offered

Credits: 1

### **MUP 340 - Basic Conducting**

Introduction to conducting techniques with emphasis on practical application to vocal and instrumental groups. Lab 3.

**Prerequisites:** MUY 212.

**Course Typically Offered:** Fall

Credits: 2

### **MUP 341 - Choral Conducting and Literature**

Introduces basic choral conducting and studies of problems in the organization and training of choral groups.

**Prerequisites:** MUP 340.

**Course Typically Offered:** Spring

Credits: 3

### **MUP 345 - Instrumental Conducting and Literature**

Introduces basic instrumental conducting, and study of problems in the organization and training of bands and orchestras.

**Prerequisites:** MUP 340.

**Course Typically Offered:** Spring

Credits: 3

### **MUP 401 - Performance-Secondary Instrument I**

Applied study in voice, keyboard, strings, winds and percussion instruments as a secondary applied area for the graduate student. May be repeated for credit.

**Prerequisites:** Music majors only; permission.

**Course Typically Offered:** Fall

Credits: 2

### **MUP 402 - Performance-Secondary Instrument II**

A continuation of MUP 401. May be repeated for credit.

**Prerequisites:** MUP 401 or permission.

**Course Typically Offered:** Spring

Credits: 2

### **MUP 405 - Keyboard Musicianship**

A comprehensive application of the study of harmony to the keyboard, directed towards the development of sight-reading and accompanying skills, keyboard score-reading, transposition, harmonization at sight, improvisation and the realization of figured bass or other chording schemes.

**Prerequisites:** MUP 216, MUY 212, MUY 214 or equivalent level, including completion of piano proficiency requirements.

**Course Typically Offered:** Fall

Credits: 2

## **MUS 100 - Recital Laboratory**

Experience in recital performance and in listening to performances of one's peers. May be repeated. Lab 1.

**Prerequisites:** Required of music majors enrolled in applied music.

**Course Typically Offered:** Fall & Spring

Credits: 0

## **MUS 121 - Principles of Singing I**

Emphasizes diction in the standard languages: French, German, Italian and English. Introduces the international phonetic alphabet and classical vocal literature, basic voice science, technique and performance practice.

**Prerequisites:** Required for first-year voice majors in Music Education, Music Performance and Bachelor of Arts in Music programs; open to others by permission.

**Course Typically Offered:** Fall

Credits: 2

## **MUS 122 - Principles of Singing II**

Continuation of MUS 121.

**Prerequisites:** Required for first-year voice majors in Music Education, Music Performance and Bachelor of Arts in Music programs; open to others by permission.

**Course Typically Offered:** Spring

Credits: 2

## **MUS 201 - Applied Music Lessons**

Applied music lessons. May be repeated for credit. Note: course topic number designates instrument or voice.

**Prerequisites:** Bachelor of Arts in Music or Music minors.

**Course Typically Offered:** Fall & Spring

Credits: 1

## **MUS 210 - Applied Music Lessons**

Applied music lessons for the first four semesters. May be repeated for credit until Junior Standing Exam is passed. Note: Course Topic number designates instrument or voice.

**General Education Requirements:** Satisfies the Artistic and Creative Expression General Education Requirement.

**Prerequisites:** Music Education or Music Performance majors.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 2

## **MUS 298 - Special Subjects in Music**

Specific topics and approaches will be chosen jointly by interested students and the staff. This offering is designed to address advanced issues not covered in regular offerings. 01-Italian Diction; 02-French Diction; 03-German Diction; 04-Harpsichord; 14-Field Practicum in Music Education; 20-Studies in European Culture; 21- Beginning Guitar; 25-Independent Study in Music History; 40-Athena Consort; 44-Recording Arts; 45-Black Bear Chorus; 64-Fundamentals of Music II.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Prerequisites:** permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1-3

## **MUS 310 - Voice Pedagogy/Literature**

A presentation of literature and/or pedagogical materials for voice. Intended to prepare the professional performer who maintains adjunct activities as a studio teacher.

**Prerequisites:** Required for Bachelor of Music in Performance majors; others by permission.

**Course Typically Offered:** Variable

Credits: 1-2

## **MUS 312 - Piano Pedagogy**

Piano Pedagogy is "The Art of Teaching Piano:" Students will analyze current methodology, research intermediate level repertoire, and develop a business plan and a studio policy. This course will provide the tools for hands-on teaching in a private setting.

**Prerequisites:** Required for all piano majors and open to other pianists by permission.

**Course Typically Offered:** Not Regularly Offered

Credits: 1

## **MUS 314 - Piano Pedagogy II**

Emphasizing "hands on" experience, students will work with piano pupils in lab and one-to-one settings. Issues such as teaching techniques, creative use of materials, attention span, concentration and the various psychological aspects of teaching will be addressed. Emphasis on interacting with students in a positive manner so that the result is a beneficial learning experience.

**Prerequisites:** MUS 312.

**Course Typically Offered:** Not Regularly Offered

Credits: 1

## **MUS 316 - Piano Literature I**

Survey of the major works of the keyboard repertoire from the Baroque and Classical periods.

**Prerequisites:** Required of piano majors, permission of the instructor required for all other students.

**Course Typically Offered:** Not Regularly Offered

Credits: 1

## **MUS 318 - Piano Literature II**

Survey of major works of the piano repertoire from the Romantic and Contemporary periods.

**Prerequisites:** Required of piano majors, permission of the instructor required for all other students.

**Course Typically Offered:** Not Regularly Offered

Credits: 1

## **MUS 350 - Applied Music Lessons**

Applied music lessons after having passed the Junior Standing Exam. . May be repeated for credit. Note: Course Topic number designates instrument or voice.

**Prerequisites:** Junior Standing Exam. Undergraduate Music Education major.

**Course Typically Offered:** Fall & Spring

Credits: 2

## **MUS 450 - Applied Music Lessons**

Applied music lessons after having passed the Junior Standing Exam. . May be repeated for credit. Note: Course Topic number designates instrument or voice.

**Prerequisites:** Junior Standing Exam. Undergraduate Music Performance major.

**Course Typically Offered:** Fall & Spring

Credits: 4

## **MUS 498 - Senior Project**

A significant research paper, original composition, or by special permission, a lecture-recital presented in lieu of a recital. Accomplished under the guidance of an assigned faculty member during the senior year.

**General Education Requirements:** Satisfies the General Education Capstone Experience Requirement for the Bachelor of Arts degree in Music.

**Prerequisites:** Senior standing. Required for all BA in Music majors.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **MUY 101 - Fundamentals of Music**

An elemental study of the dimensions and basic characteristics of musical sounds, with primary emphasis upon the development of skills and concepts through creating, performing and analysis.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **MUY 111 - Elementary Harmony I**

Diatonic chordal relationships through written work, analysis, and keyboard application.

**Prerequisites:** Music major and permission.

**Course Typically Offered:** Fall

Credits: 2

### **MUY 112 - Elementary Harmony II**

A continued study of chordal relationships. Primarily for music majors.

**Prerequisites:** MUY 111 and permission.

**Course Typically Offered:** Spring

Credits: 2

### **MUY 113 - Elementary Sight Singing and Ear Training I**

Sight singing, ear training and dictation.



**Prerequisites:** MUY 101 or permission.

**Corequisites:** MUY 111

**Course Typically Offered:** Fall

Credits: 2

## **MUY 114 - Elementary Sight Singing and Ear Training II**

Sight singing, ear training and dictation.

**Prerequisites:** MUY 113.

**Course Typically Offered:** Spring

Credits: 2

## **MUY 211 - Advanced Harmony I**

A continuation of MUY 112. Chromatic chordal relationships and 20th century harmonic practice.

**Prerequisites:** MUY 112.

**Course Typically Offered:** Fall

Credits: 2

## **MUY 212 - Advanced Harmony II**

A continuation of MUY 112. Chromatic chordal relationships and 20th century harmonic practice.

**Prerequisites:** MUY 211.

**Course Typically Offered:** Spring

Credits: 2

## **MUY 213 - Advanced Sight Singing and Ear Training I**

A continuation of MUY 114.

**Prerequisites:** MUY 114.

**Course Typically Offered:** Fall

Credits: 2

## **MUY 214 - Advanced Sight Singing and Ear Training II**

A continuation of MUY 114.

**Prerequisites:** MUY 213.

**Course Typically Offered:** Spring

Credits: 2

## **MUY 310 - Jazz Improvisation I**

The direct application of music theory to jazz improvisation, with emphasis on the development of skills and knowledge through analysis, creating and performing on a daily basis. Pitched instruments in "C", "Bb", "Eb", or "C bass clef" and that are capable of a full chromatic scale are essential for participation in the course. Keyboardists must bring their own instrument. Vocalists will need to play a pitched musical instrument that meets the criteria outlined above. Memorization of all 10 works addressed in the texts will be required.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Prerequisites:** MUY 212 or permission of instructor. An audition may be required.

**Course Typically Offered:** Fall, Odd Years

Credits: 3

## **MUY 311 - Jazz Improvisation II**

A continuation of MUY 310. Involves the direct application of music theory to jazz improvisation, with emphasis on the development of skills and knowledge through analysis, creating, and performing on a daily basis. Pitched instruments in "C", "Bb", "Eb", or "C bass clef" *only*, capable of a full chromatic scale, are essential (keyboardists must bring their own) for participation in the course. As with MUY 310, memorization of at least 8 but not more than 16 works from the standard jazz repertory will be required.

**Prerequisites:** MUY 310.

**Course Typically Offered:** Spring, Odd Years

Credits: 3

### **MUY 315 - Twentieth Century Musical Techniques**

Techniques for structural analysis of post-impressionist through contemporary music.

**Prerequisites:** MUY 212 or permission.

**Course Typically Offered:** Not Regularly Offered

Credits: 2

### **MUY 410 - Chamber Jazz Arranging and Piano I**

The study of arranging for and performance on the piano as it pertains to *Chamber Jazz*.

**Prerequisites:** MUP 206 and MUY 212 or permission of instructor. An audition and/or pretest may be required.

**Course Typically Offered:** Fall, Even Years

Credits: 3

### **MUY 411 - Chamber Jazz Arranging and Piano II**

A continuation of MUY 410. The continued study of arranging for and performance on the piano as it pertains to *Chamber Jazz*.

**Prerequisites:** MUY 410.

**Course Typically Offered:** Spring, Even Years

Credits: 3

### **MUY 422 - Tonal Counterpoint**

A study of contrapuntal techniques as practiced by composers of the 18th and 19th centuries.

**Prerequisites:** MUY 112 or permission.

**Course Typically Offered:** Not Regularly Offered

Credits: 2

### **MUY 451 - Form and Analysis**

Analysis of the structure of musical compositions of various historical periods, including the study of common forms found in the standard concert repertoire.

**Prerequisites:** MUY 212.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **MUY 452 - Orchestration**

Study and practical application of scoring techniques for various instrumental groups, including orchestral and band transcriptions and reductions.

**Prerequisites:** MUY 212.

**Course Typically Offered:** Spring

Credits: 3

### **MUY 461 - Composition I (Small Forms)**

Composition in the Variation Forms, including ostinato, ground motive, passacaglia, chaconne and theme with variations.

**Prerequisites:** MUY 212 or permission.

**Course Typically Offered:** Variable

Credits: 2

### **NAS 101 - Introduction to Native American Studies**

Introduces the interdisciplinary perspective of Native American Studies. Examines the experience of Native Americans, past and present, focusing on diverse and distinct cultural areas and historical events. Explores Native Americans' integral part in the development of the Americas and the European impact on traditional Native societies, historically and currently. Lec 3.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and Cultural Diversity and International Perspectives Requirements.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **NAS 102 - Introduction to Wabanaki Culture, History and Contemporary Issues**

Examines the world view, way of life, history, art, literature and contemporary issues of the Native nations that make up the Wabanaki Confederacy. The culture, philosophy and creation stories of the individual tribes, including the Penobscot, Passamaquoddy, Maliseet and Micmac tribes are explored. In addition, concepts such as sovereignty, treaty rights and tribal government are discussed. NAS 101 is recommended.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and Cultural Diversity and International Perspectives Requirements.

**Course Typically Offered:** Variable

Credits: 3

## **NAS 201 - Topics in Native American Studies**

Provides an interdisciplinary, intermediate level of study of selected topics regarding American Indians in more detail and complexity.

**Prerequisites:** NAS 101 or permission.

**Course Typically Offered:** Fall & Spring

Credits: 1-3

## **NAS 230 - Maine Indian History in the Twentieth Century**

Too often Native people are relegated to the distant past, leading society to have misunderstandings about indigenous communities today. This course introduces students Wabanaki history of Maine and eastern Canada in the twentieth century. The term "Wabanaki" is an all-inclusive term that refers primarily to Mi'kmaqs, Maliseets, Passamaquoddies, and Penobscots, along with other Abenaki groups. The tribal homeland encompasses present-day northern New England, the Maritime Provinces, and southern Quebec. We will explore the variety of ways Wabanaki experiences deviated from the national narrative on American

Indians and examine when Native challenges were in lockstep with western tribes in the twentieth century. This course considers the interplay between cultural traditions and modernity. The regional scope highlights local developments. We will investigate prominent themes of resistance, accommodation, activism, sovereignty, and cultural survival. Wabanaki people were positive actors in their own affairs, not passive pawns subdued by forces beyond their control. This course will provide context to contemporary challenges Wabanaki people confront. As one tribal historian astutely noted, "I can never give up hope, as my ancestors never gave up hope."

HTY 222 and NAS 230 are identical courses.

**General Education Requirements:** Satisfies the General Education Population and Environment and Cultural Diversity or International Perspectives requirements.

**Course Typically Offered:** Fall.

Credits: 3

### **NAS 270 - Native American Women**

This course is an exploration of the American Indian woman's lifestyles and social roles from a variety of tribal cultures. It will focus on the traditional and contemporary values and roles of American Indian women. This course will explore the history of the lives of American Indian women from a variety of tribes. (WGS 270 and NAS 270 are identical courses.)

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives and the Social Context and Institutions requirements.

**Prerequisites:** NAS 101 or WGS 101 or permission.

**Course Typically Offered:** Fall

Credits: 3

### **NAS 295 - American Indians and Climate Change**

Introduces students to the Indian cultures of the United States and U.S. territories in the South Pacific, paying particular attention to the issue of climate change and how it is impacting indigenous peoples in these regions; also examines climate effects on natural resource conditions as it relates to Indian cultures and the roles indigenous groups play in policy responses to climate change.

**Course Typically Offered:** Variable

Credits: 3

### **NAS 298 - Directed Study in Native American Studies**

Individual study, research, field experience and writing projects in Native American Studies. May be repeated for credit.

Arranged upon request.

**Prerequisites:** NAS 101 and permission.

**Course Typically Offered:** Fall & Spring

Credits: 1-6

### **NAS 401 - Advanced Topics in Native American Studies**

Provides an advanced level of study of selected topics regarding American Indians in great detail and specificity.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** NAS 101, junior standing and permission.

**Course Typically Offered:** Spring, Summer

Credits: 3

### **NAS 451 - Native American Cultures and Identities**

Covers both traditional culture patterns and modern developments and problems. Includes consideration of traditional culture areas, emphasizing adaptations and cultural dynamics, past and present.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement

**Prerequisites:** ANT 102 or NAS 101 permission

**Course Typically Offered:** Spring, Even Years

Credits: 3

### **NAS 498 - Directed Study in Native American Studies**

Advanced individual study, research, field experiences and writing projects in Native American Studies. May be repeated for credit. Arranged upon request.

**Prerequisites:** NAS 101, one additional course within the Native American Studies minor, junior or senior standing, and permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1-6

### **NAV 100 - Naval Leadership Laboratory**

No description. (Pass/Fail Grade Only.)

**Prerequisites:** permission of instructor.

**Course Typically Offered:** Fall & Spring

Credits: 0

### **NAV 101 - Introduction to Naval Science**

Emphasizes organizational structure, warfare components, and assigned roles/missions of the U.S. Navy/USMC. Covers all aspects of Naval Service from its relative position within DoD, to the specific warfare communities/career paths. Also includes basic elements of leadership/Navy Core Values. Designed to give student initial exposure to many elements of Naval culture. Also provides conceptual framework/working vocabulary for student to use on summer cruise. Laboratories are also provided to include alcohol and drug abuse prevention, detection and control, tobacco use cessation/prevention, suicide and HIV/AIDs prevention.

**Course Typically Offered:** Fall

Credits: 2

### **NAV 102 - Naval Ships Systems I (Engineering)**

Detailed study of ship characteristics and types including ship design, hydrodynamic forces, stability, compartmentation, propulsion, electrical and auxiliary systems, interior communications, ship control and damage control. Included are basic concepts of theory/design of steam, gas turbine, diesel and nuclear propulsion. Case studies on leadership/ethical issues in the engineering area are also covered.

**Course Typically Offered:** Spring, Even Years

Credits: 3

### **NAV 201 - Naval Ships Systems II (Weapons)**

Outlines theory and employment of weapons systems. Student explores the processes of detection, evaluation, threat analysis,



weapon selection, delivery, guidance and explosives. Fire control systems and major weapons types are discussed including capabilities and limitations. The physical aspects of radar and underwater sound are described. Facets of command, control, communications, computers and intelligence are explored as means of weapons system integration. The tactical and strategic significance of command and control warfare and information warfare is discussed. Supplemented with review/analysis of case studies involving the moral and ethical responsibilities of leaders in the employment of weapons. Other major themes in leadership include honor, courage, integrity, loyalty, responsibility, authority, accountability, character development, crisis decision making, and conflict resolution.

**Course Typically Offered:** Spring, Odd Years

Credits: 3

## **NAV 202 - Sea Power and Maritime Affairs**

The history of navies in the modern period (c. 1500 to the present) including use of naval forces in the achievement of national goals, development of naval technology and tactics, effects of naval construction and manning upon society, sociology of navies, comparison of naval policies in various states, the current balance sheet of navies. (Additional work will be required for Navy ROTC students.) (This course is identical to HTY 280.)

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Social Contexts and Institutions Requirements.

**Course Typically Offered:** Variable

Credits: 3

## **NAV 301 - Navigation and Naval Operations I**

In-depth study of the theory, principles, procedures and application of plotting, piloting and celestial navigation. Students learn piloting techniques, the use of charts, the use of visual and electronic aids, and theory of operation of both magnetic and gyro compasses. Celestial navigation topics include celestial coordinate system, the navigation triangle and an overview of the sight reduction process. Students develop practical skills in plotting and celestial navigation. Other topics include tides, currents, effects of wind/weather, voyage planning and application and understanding of international/inland rules of navigation. Supplemented with review/analysis of case studies involving actual navigation.

**Course Typically Offered:** Fall, Even Years

Credits: 3

## **NAV 302 - Navigation and Naval Operations II**

Study of relative motion, vector-analysis theory, formation tactics and ship employment. Also included are introductions to naval operations and operations analysis, ship behavior and characteristics in maneuvering, applied aspects of shiphandling, afloat communications, and command and control. Supplemented with a review/analysis of case studies involving

moral/ethical/leadership issues pertaining to the concepts listed above.

**Prerequisites:** NAV 301 and permission of instructor.

**Course Typically Offered:** Fall, Odd Years

Credits: 3

### **NAV 303 - Leadership and Management**

Comprehensive study of organizational behavior and management. Topics include survey of management functions of planning, organizing and controlling; an introduction to individual/group behavior in organizations; and extensive study of motivation/leadership. Major behavior theories explored in detail. Practical applications explored through using experiential exercises, case studies and laboratory discussions. Other topics include decision making, communication, responsibility, authority, accountability and total quality leadership.

**Course Typically Offered:** Spring

Credits: 3

### **NAV 304 - Leadership and Ethics**

Sharpens the understanding of some important issues about morality and develops moral reasoning ability. Integrates an intellectual exploration of Western moral traditions and ethical philosophy with topics and issues confronting newly commissioned officers as military leaders. Provides a foundation in major moral traditions including Utilitarianism, Kantian ethics, Constitutional Law, Natural Law theory, and virtue ethics. Students will discuss the ethics of war through discussions of the Just War Theory (Jus Ad Bellum ) and the Conduct of War (Jus in Bello ). Readings will be from various fields, including leadership, ethics, philosophy, theology, and law and will be enhanced through case studies, video segments, and current issues in the news.

**General Education Requirements:** Satisfies the General Education Ethics Requirement.

**Prerequisites:** Permission of instructor. It is recommended that students have junior or senior standing, however they need not be in the NROTC program.

**Course Typically Offered:** Spring

Credits: 3

### **NAV 310 - Evolution of Warfare**

Traces development of warfare from dawn of recorded history to the present, focusing on the impact of major military theorists, strategists, tacticians and technological developments. Students acquire a basic sense of strategy, develop an understanding of military alternatives, and see the impact of historical precedence on military thought and actions.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition, Social Contexts and Institutions and Cultural Diversity and International Perspective Requirements.

**Prerequisites:** permission of instructor.

**Course Typically Offered:** Spring

Credits: 3

### **NAV 410 - Amphibious Warfare**

A historical survey of the development of amphibious doctrine and the conduct of amphibious operations. Emphasis is placed on the evolution of amphibious warfare in the 20th century, especially during World War II. Present day potential and limitations on amphibious operations, including the rapid deployment force concept, are explored.

**Prerequisites:** permission of instructor.

**Course Typically Offered:** Spring

Credits: 3

### **NFA 117 - Issues and Opportunities**

Consists of weekly small group sessions (usually of 15 or fewer students) conducted by the students' first-year advisor. Not offered in all programs. Course will include field trips during class hours and may include weekends.  
(Pass/Fail Grade Only.)

**Course Typically Offered:** Fall

Credits: 1

### **NMD 100 - Introduction to New Media**

This introductory course explores what new media are, how they are produced, who produces them, and why they challenge how we think, act, create, and relate to other people. While revolutions in communication technologies have transformed individuals and societies over thousands of years, this course draws on historical context to clarify the current transformation from hierarchic and authoritative modes of cultural organization to network and distributed models. Lecture and discussion format with hands-on laboratory.

**Prerequisites:** New Media Majors

**Course Typically Offered:** Fall

Credits: 3

## **NMD 102 - Introduction to New Media Technologies, Interaction Design and Prototyping**

Students are provided an introduction to and overview of new media and emerging technologies, interaction design, and software development. Topics covered include social networking, mobile computing, and physical computing. Students develop skills in research, group collaboration, brainstorming practices, concept development, and rapid project prototyping. Course is taught via a lecture/lab format.

**Prerequisites:** New Media Majors

**Course Typically Offered:** Fall

Credits: 3

## **NMD 104 - Design Basics for New Media**

Introduction to principles and theories of visual design, in traditional and electronic media; processes, methods and technologies relative to the creative production of two-dimensional visual imagery; use of the computer as a creative tool for the development of expressive and professional images. Focus on the creative process in visual design. Studio 3.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Course Typically Offered:** Spring

Credits: 3

## **NMD 150 - Script Your World**

This course introduces students to methods and concepts of structured problem solving and program development using JavaScript. While the course is taught using scripting within a web browser, the principles described are applicable not just to using JavaScript in many different environments but to creative problem solving in general. No prior programming experience is required, but students should be familiar with HTML.

Students with a stronger technical background and interest are advised to take NMD 160, which will emphasize server-side scripting in different programming languages. Students with a stronger interest in audiovisual design will be advised to take NMD 150, which will emphasize client-side scripting.

**Prerequisites:** NMD 102 is strongly recommended.

**Course Typically Offered:** Spring

Credits: 3

## **NMD 160 - Creative Programming**

In this course, students will learn to use a creative process in programming a computer by developing code to generate images and sound, produce animations, manipulate text, and make media that respond interactively to user input. The class will use computing programs such as Processing, an artist-designed programming language designed for visual and interactive applications, as a basis for creating and developing software "sketches" that allow visual expression. Another environment introduced with be Pd ("pure data", an open source version of Max/MSP), which is a visual programming language. Pd enables musicians, visual artists, performers, researchers, and developers to create software graphically, without writing lines of code. In the process, students will learn basic programming skills, including understanding and controlling how data is represented in computers (data types and structures), telling the computer how to make decisions on the fly (conditionals), how and when to repeat instructions (loops), structuring and organizing computer code (functions and objects), and techniques for debugging code. This course is designed particularly for students in New Media, Arts, Music, Humanities, and Social Sciences interested in understanding better how computers work and in learning to create their own digital media, through students of all backgrounds are welcome. The course assumes basic high school math and no technical background.

**Prerequisites:** NMD 102 is strongly recommended.

**Course Typically Offered:** Spring

Credits: 3

## **NMD 200 - New Media Strategies**

This course covers new media culture and theory of the present, bringing students up to speed on a range of contemporary artistic, political, and ethical issues in the field. Students in this course also extend the technical skills acquired in previous courses by applying them to a creative application of their own individual or collaborative design, such as an advanced portfolio. Course is taught via lecture with labs.

**Prerequisites:** NMD 100 and NMD 102 and NMD 104

**Course Typically Offered:** Fall

Credits: 3

## **NMD 202 - Information Design**

Information design is the art and science of organizing and designing information to help people effectively fulfill their needs. It can be applied to websites, handheld devices and other platforms. Students will learn new design techniques and complete an entire project design cycle to practice their skills in a variety of areas related to web design, database construction, and data driven applications. The class requires basic web design experience.

**Prerequisites:** Approved New Media portfolio review, or permission.

**Course Typically Offered:** Variable

Credits: 3

### **NMD 203 - Creative Hypertext**

Creative workshop exploring technical, cultural and creative dimensions of hypertext. An introduction to hypertext as a creative tool that will focus on a review of html, analysis of hypertext story and e-poetry, and production of hypertext fiction and/or poetry.

**Prerequisites:** Approved New Media portfolio review, or permission.

**Course Typically Offered:** Fall

Credits: 3

### **NMD 204 - Introduction to Time-Based Art and Design**

An introduction in the concepts, process, methods, principles and theories posed by Time-Based Arts. Time-Based Arts are those creative expressions that involve converged and distributable media such as, digital film, animation, digital audio, interactive cable, satellite, broadband and emerging technologies. Students investigate unique problems in design and production presented by Time-Based and converged media as well as apply the aesthetic principles of art and design in the creation of artistic, expressive and/or conceptual structures in a time-based media.

**Prerequisites:** Approved New Media portfolio review, or permission.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **NMD 205 - Introduction to Variable Media**

Students will explore strategies for outwitting obsolescence through medium-independent project design and preservation. Also touches on social and philosophical attitudes toward memory, loss, and cultural survival. Guest speakers will include artists and curators involved in distributed approaches to cultural legacy. A final project will require students to remix and reinterpret each other's works.

**Prerequisites:** Approved New Media portfolio review, or permission.

**Course Typically Offered:** Variable

Credits: 3

## **NMD 206 - Project Design Workshop I**

Explores creativity and problem solving using tools, techniques and tactics of new media. Identifies critical social, economic, cultural and ecological problems in neighborhoods and communities. Draws on creative skills and playful impulses to design and build solutions using new media strategies. An ecologically mindful, whole systems approach is adopted, seeking out interdisciplinary partners across campus and community to achieve solutions. Individual, peer, and team generated projects are emphasized.

**Prerequisites:** NMD 200

**Course Typically Offered:** Spring

Credits: 3

## **NMD 240 - Introduction to Web Concepts and Design**

Introduces the concepts, technical requirements and production processes needed for basic Web site development and construction. Topics include site design, image processing, visual Web editors, html and layout, interface design and basic behaviors.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Prerequisites:** NMD 104 or NMD 270 or permission.

**Course Typically Offered:** Variable

Credits: 3

## **NMD 245 - Film Criticism and Theory**

Offers a mass communication/media studies overview of contemporary film. Students will develop skills in the analysis of film form and content so that they will achieve a high degree of proficiency in the use of film studies vocabulary. After developing an understanding of how the different elements of film work to construct meaning within (as well as outside of) film, the course will survey major theories and methodologies of film studies. Likewise, participants will receive an overview of film history and will develop familiarity with major historical and technological development of film. Participants will learn to think critically about the media industry and to evaluate film as art form, individual psychological experience, technology, social text, and commodity. (CMJ 245 and NMD 245 are identical courses.)

**Course Typically Offered:** Variable

Credits: 3

## **NMD 250 - Electronic Music Composition I: Item and Arrangement**

Designed to provide students with an opportunity to explore the ideas and techniques of audio composition with recorded media. Item and Arrangement refers to the style of composition that creatively places recorded sounds in a fixed timeline. Starting with Musique Concrete in the late 1940's, this technique continues today as a foundation for many contemporary and popular forms, including acoustic ecology and hip-hop. Students can expect to learn how to work with sound in the digital environment including fundamentals in field recording technique, waveform editing, filtering and digital processing. Students will be expected to regularly produce and discuss work in relation to the theoretical history of Electronic Music.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Course Typically Offered:** Fall

Credits: 3

### **NMD 251 - Electronic Music Composition II: Composing a Process**

A companion of NMD 250. Offers an introduction to creating Electronic Music, and electronic art in general, in the form of a process rather than as a fixed object. From John Cage through Conceptualism, viewing art-making as "composing a process" is central to much contemporary art, particularly in New Media. Students will be introduced to compositional methods such as indeterminacy, algorithmic composition, systems analysis and interactivity as well as fundamentals of digital audio synthesis and composing in the Max/MSP environment. Students will be expected to regularly produce and discuss work in relation to the theoretical history of Electronic Music.

**Course Typically Offered:** Spring

Credits: 3

### **NMD 270 - Digital Art I**

An introduction to two-dimensional digital art. Includes professional 2D and related software, input/output options and image creation and editing. Emphasizes using the tools for the production of fine art. (This course is identical to ART 270.)

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Prerequisites:** Approved New Media portfolio review, or permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **NMD 295 - Topics in New Media**



Topics not regularly covered in other new media courses. Content varies to suit current needs. May be repeated for credit.

**Prerequisites:** New Media Majors or permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1-3

## **NMD 302 - Interaction Design in New Media**

Students use principles of Interaction Design along with the emerging technologies of new media to define projects in terms of purpose, scope, audience, information, core elements, task flows, layout, and affordance. Theoretical and practical perspectives are blended to incorporate basic knowledge of information and new media technology. A hands-on and guided practice, the course will focus on technology systems, including the software, hardware, mobile devices, sensors and other interfaces by which the system defines or responds to user behavior. Satisfies Year Three Sequence credit for New Media majors.

**Prerequisites:** NMD 206 or permission

**Course Typically Offered:** Not Regularly Offered

Credits: 3

## **NMD 306 - Project Design Workshop II**

New Media project design, with emphasis on team-based research and development. Requires students to think across a variety of platforms, from analog tools to stand alone devices to online applications. Students will be challenged to think creatively and rigorously about the objective, structure, and form of their projects; the work of each team will culminate in a new media proposal and/or prototype, preparing them for the New media capstone sequence.

**Prerequisites:** NMD 206 and either NME 301 or NMD 302 or NMD 303 or NMD 304 or NMD 305

**Course Typically Offered:** Spring, Summer

Credits: 3

## **NMD 324 - Year in Film I**

The first part in a two-semester course in the process, theory, practice and problems of digital filmmaking. Through the examination of films, narrative fiction and the completion of out-of-class assignments, students will gain insight into the realm of digital filmmaking. Structured as both an academic and "hands-on" approach to the language, method and theory of digital filmmaking through applied concepts and process. May be repeated for credit.

**Prerequisites:** Sophomore standing and permission of instructor.

**Course Typically Offered:** Fall

Credits: 3

### **NMD 341 - Photographic Reporting and Storytelling**

An overview of photojournalism history, theory and ethics. Exercises teach skills and strategies used by newspaper, magazine and on-line photographers and editors and challenge students to deal responsibly with issues of invasion of privacy, subject representation, copyright and fair use and image manipulation. (This course is identical to CMJ 261.)

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Course Typically Offered:** Variable

Credits: 3

### **NMD 342 - Interaction Design and Physical Computing**

Interaction Design and Physical Computing will explore opportunities for physical interaction with our environment. The course focuses on materials and methods used within interaction design to combine hardware, software and physical materials into working prototypes. Students will learn fundamentals of physical computing to design and build interactive objects and environments using sensors, actuators and microcontrollers.

**Prerequisites:** NMD 150 or NMD 160 or COS 125 or COS 220

**Course Typically Offered:** Spring

Credits: 3

### **NMD 343 - Digital Narrative Workshop I**

Explores emerging forms of digital and networked storytelling and how these new forms transform authorship, audience, interaction and publishing. Students produce their own digital narratives using web based, animation, or networked formats. Strong narrative skills and/or digital skills required. Teams projects and skill sharing encouraged. Satisfies Year Three Sequence credit for New Media majors..

**Prerequisites:** NMD 206 or ENG 205 or both THE 112 & THE 117.

**Course Typically Offered:** Spring

Credits: 3

## **NMD 344 - Time-Based Art and Design I**

An introduction in the concepts, process, methods, principles and theories posed by digital video, animation, and audio. Students investigate unique problems in design and production presented by time-based media as well as apply the aesthetic and design principles in the creation of artistic, expressive and/or conceptual structures in time-based media. Satisfies Year Three Sequence credit for New Media majors

**Prerequisites:** NMD 206

**Course Typically Offered:** Spring

Credits: 3

## **NMD 345 - Networks and Creativity I**

Explores the translation of works across media and between individuals, and the impact of copyright and open-source licensing on sharing the scores, scripts, and sources necessary for such translations. In class projects, students apply techniques such as migration, emulation, and reinterpretation to preserve obsolescent media such as vintage games as well as to remix contemporary media such as digital images and audio. Satisfies Year Three Sequence credit for New Media Majors.

**Prerequisites:** NMD 206.

**Course Typically Offered:** Variable

Credits: 3

## **NMD 370 - Digital Art IIA: 3D Modeling and Animation**

An introduction to the concepts and tools of 3D modeling and animation on the computer. Includes techniques to create narratives and provides hands-on experience with appropriate hardware and software. (This course is identical to ART 370.)

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Prerequisites:** ART 270 or NMD 270 and permission.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **NMD 371 - Digital Art IIB: Digital Video**

An introduction to digital, non-linear video editing. Use of professional-level equipment to create short, time-based artworks.

(This course is identical to ART 371.)

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Prerequisites:** ART 270 or NMD 270 or permission.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **NMD 398 - Topics in New Media**

Topics not regularly covered in other new media courses. Content varies to suit current needs. May be repeated for credit.

**Prerequisites:** Department consent.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1-3

### **NMD 424 - Year in Film II**

The second part in a two-semester course in the process, theory, practice and problems of digital filmmaking. Concentrates on practical experience. Students will learn the cinematic process through direct development and production of short subject digital films. Structured as both an academic and "hands-on" approach to the language, method and theory of digital filmmaking. May be repeated for credit.

**Prerequisites:** Sophomore standing and permission.

**Course Typically Offered:** Variable

Credits: 3

### **NMD 430 - Topics in New Media**

An exploration of intermediate and advanced topics in multimedia production and design, including, among others, digital video production, software and hardware design or, electronic publishing. Designed to provide students with a deeper and more sophisticated experience with a multimedia issue, tool, or skill--or combination of all three.

**Prerequisites:** Department consent.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1-3

## **NMD 441 - Documentary Photography and Audio**

Provides the essential skills, concepts and processes used by documentary still photographers and audio producers to create professional quality digital mixed media products for the Internet and other interactive media. (This course is identical to CMJ 361.)

**Prerequisites:** C- or better in CMJ 261 or C- or better in NMD 341.

**Course Typically Offered:** Variable

Credits: 3

## **NMD 442 - User Experience Design**

This is a course that explores major concepts in designing the User Experience (UX). UX Design plays a critical role in the successes and effectiveness of any product, application and service. It's just not enough to have technologically advanced and aesthetically appealing products, applications and services - it is critical that they deliver a good user experience to their end users.

In order to understand the foundations of UX Design, this course will provide a comprehensive overview of the user experience design process and is intended to familiarize students with the methods, concepts, and techniques necessary to make user experience design an integral part of developing effective interactions. The course provides students with an opportunity to acquire the resources, skills, and hands-on experience they need to design, develop, and evaluate information interfaces from a user-centered design perspective.

**Prerequisites:** NMD 206 is a recommended prerequisite.

**Course Typically Offered:** Fall

Credits: 3

## **NMD 443 - Digital Narrative Workshop II**

Students explore and produce participatory narratives which require user input such as role-playing games, video games, alt reality games, mobile apps and place-based storytelling. Students examine the use of interactive and social play to address real world issues in a participatory narrative format. Focus on alternative gaming paradigms as well as games and narratives with culturally and ideologically complex worlds and goals. Satisfies Year Four Sequence credit for New Media majors.

**Prerequisites:** NMD 343 or ENG 307 or ENG 308 or ENG 309 or THE 216

**Course Typically Offered:** Spring

Credits: 3

## **NMD 444 - Time-Based Art and Design II**

Advanced level exploration of the principles of design and the creative process relative to time-based media. Focus is on the design of imaginative, and/or metaphorical structures combining text, image and sound into self-contained digital works. Students experiment with the transmission of creative and expressive information through sequential and time-based formats, including fixed-image sequence, digital video, and animations. Satisfies Year Four Sequence credit for New Media majors.

**Prerequisites:** NMD 344

**Course Typically Offered:** Spring

Credits: 3

## **NMD 445 - Networks and Creativity II**

This course teaches how to conceive and build new media applications that explore the sharing of information. Students learn how to design cutting-edge new applications using web pages, mobile applications, widgets, image manipulation and more. Legal and cultural contexts for sharing are also explored, e.g., filesharing lawsuits and music remixes. Students design and prototype a creative application of their own choosing. Satisfies Year Four Sequence credit for New Media majors.

**Prerequisites:** NMD 345. Non-majors should have some experience with programming and/or Web design.

**Course Typically Offered:** Fall

Credits: 3

## **NMD 490 - Independent Study in New Media**

Topics not regularly covered in other courses. Content varies to suit current needs. May be repeated for credit.

**Prerequisites:** permission of instructor.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

## **NMD 498 - Practicum in New Media I**

Part one of a two-part capstone experience on campus or in a commercial or other institutional environment with faculty supervision. Students meet in a weekly seminar to discuss progress. Each defines and researches his or her own individual project and prepares to bring it to fruition as a new media publication, such as a Web site; animated, feature or documentary

video; or other digital production.

**General Education Requirements:** Satisfies the General Education Writing Intensive requirement. Together with NMD 499, this course also satisfies the General Education Capstone Experience Requirements.

**Prerequisites:** Senior Standing and a grade of C or better in NMD 306.

**Course Typically Offered:** Fall

Credits: 3

## **NMD 499 - Practicum in New Media II**

Part two of a two-part capstone experience on campus or in a commercial or other institutional environment with faculty supervision. Students meet in a weekly seminar to discuss progress. Each defines and researches his or her own individual project, presents it within the format of the seminar and brings it to fruition as a new media publication, such as a Web site; animated, feature or documentary video; or other digital projection.

**General Education Requirements:** Together with NMD 498, this course satisfies the General Education Capstone Experience requirement.

**Prerequisites:** NMD 498.

**Course Typically Offered:** Spring

Credits: 3

## **NUR 101 - Issues and Opportunities in Nursing**

Introduces first-year Nursing students to issues in nursing education and University resources. Assists with the development of writing and critical thinking skills. Seeks to enhance cultural growth and understanding and to influence the establishment of self-care and wellness as a priority for nursing students. Discussion of legal and ethical aspects and professional organizations in nursing. Students meet clinical faculty in order to explore their education and experiences in nursing.

**Course Typically Offered:** Fall

Credits: 1

## **NUR 102 - Foundations of Nursing Practice I**

This course is designed to introduce students to clinical nursing practice through classroom and laboratory learning experiences. Students will begin to develop the knowledge, skills, and attitudes required to meet selected core competencies as identified by the Quality and safety Education for Nurses (QSEN) initiative. These core competencies will include patient centered care, safety, comfort, and communication. Lab, 2.

NOTE: This course is intended for Nursing Majors with a minimum cumulative GPA of 2.5, and at least a grade of C in BIO 100 and in both BMB 207 and BMB 209. To be eligible to take this course, students must have completed at least one semester of the nursing program of study.

**Prerequisites:** Nursing major, minimum cumulative GPA of 2.5, and a minimum grade of "C" in either BIO 100, or both BMB 207 and BMB 209. To be eligible to take this course, students must have completed at least one semester of the nursing program of study.

**Course Typically Offered:** Fall & Spring

Credits: 1

## **NUR 103 - Foundations of Nursing Practice II**

This course is designed to introduce students to the concept of professional nursing practice. Students will begin to develop the knowledge, skills and attitudes required to meet selected core competencies as identified by the Quality and Safety Education for Nurses (QSEN) initiative. These core competencies include patient-centered care, quality improvement, evidence-based practice, interprofessional teams, and informatics. Standards of professional nursing practice are incorporated into the course including those from the American Nurses Association (ANA); the American Association of Colleges of Nursing (AACN) and the Maine State Board of Nursing (MSBN). Theoretical discussions and case studies will be used to assist students in acquiring the knowledge to develop clinical decision-making skills.

NOTE: This course is intended for Nursing Majors with a minimum Cumulative GPA of 2.5, and at least a grade of C in BIO 100 and in both BMB 207 and BMB 209.

**Prerequisites:** Department Consent

**Course Typically Offered:** Fall

Credits: 3

## **NUR 165 - Introduction to Care of the Older Adult**

This course provides a foundation of essential knowledge skills and attitudes in the provision of care to older adults. The content focuses on aging as a normal development process and includes analysis of issues confronting this population. Key recommendations and evidence-based practice from the Hartford Institute of Geriatric Nursing and the American Association of Colleges of Nursing's Recommended Baccalaureate Competencies and Curricular Guidelines for Nursing Care of Older Adults are embedded in the course.

**Prerequisites:** Department Consent Required. Nursing Major, Minimum Cumulative gpa of 2.5 and a grade of C or better in both BIO 100 and NUR 102.

**Corequisites:** NUR 103.

**Course Typically Offered:** Fall and Spring



Credits: 1

## **NUR 200 - Care of Adults I**

This course is designed to immerse students into professional nursing practice with a focus on the health and illness care of adults. Patient-centered care, safety, teamwork and collaboration, and evidence-based practice are highlighted through case study, lecture and discussion. The student will use writing as a method for learning about the profession and discipline of nursing and for developing critical thinking skills. This course also provides students with the mathematics skills necessary to provide safe patient care. Nursing majors can satisfy three credits of the General Education Quantitative Literacy requirement by successfully completing NUR 200, NUR 201 and NUR 302.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement. Nursing majors can satisfy three credits of the General Education Quantitative Literacy requirement by successfully completing NUR 200, NUR 201 and NUR 302.

**Prerequisites:** A grade of C or better in NUR 102 and in NUR 103

**Corequisites:** NUR 201, NUR 202, NUR 265 and NUR 303.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **NUR 201 - Care of Adults I Clinical**

This course introduces the student to the professional nursing role in direct care learning experiences. Students will build on knowledge, skills and attitudes gained from the science and humanities, previous and concurrent nursing courses in the provision of professional nursing care to adults. This clinical experience will provide students with the opportunities to apply theoretical knowledge, critical thinking, and basic nursing skills when implementing safe patient care. NOTE: This course is intended for students in the School of Nursing program with Sophomore standing and successful completion of NUR 102; NUR 103 (may be taken concurrently).

**General Education Requirements:** Together with NUR 200 & NUR 301, this course satisfies 3 credits of the General Education Quantitative Literacy requirement for Nursing majors only.

**Prerequisites:** Permission.

**Corequisites:** NUR 200, NUR 202, NUR 300 and NUR 303.

**Course Typically Offered:** Fall & Summer

Credits: 1

## **NUR 202 - Application of Theory to Nursing Practice I**

This course prepares students to provide holistic evidence-based nursing care through laboratory learning experiences. Students will develop the knowledge, skills, and attitudes required to meet selected core competencies for safe patient care. Lab: 2

Note: This course is intended for Nursing Majors with Sophomore standing and who have successfully completed NUR 102; NUR 103 (may be taken concurrently).

**Prerequisites:** Permission.

**Corequisites:** NUR 200, NUR 201, NUR 300 and NUR 303.

**Course Typically Offered:** Fall and Summer

Credits: 1

## **NUR 265 - Human Genetics and Genomics for Nursing Practice**

This course introduces nursing students to the application of genetic and genomic information and technologies to the care of patients and their families. Students will begin to develop the knowledge, skills and attitudes required to meet selected core competencies as identified by the Essentials of Genetic and Genomic Nursing: Competencies, Curricula Guidelines and Outcome Indicators. These competencies include understanding the genetic and genomic basis of health and/or illness for which an individual is seeking care and the variations that impact his or her response.

**Prerequisites:** Sophomore standing in the School of Nursing, Minimum Cumulative gpa of 3.0 and a grade of C or better in BIO 100 and Department Consent.

**Course Typically Offered:** Fall & Spring

Credits: 1

## **NUR 300 - Health Assessment Through the Lifespan**

Develops the knowledge and skills necessary to conduct an individual assessment. Emphasis on data collection through the development of communication, interviewing, history-taking and physical examination skills. Lec 3, Lab 3.

**Prerequisites:** BIO 208, CHF 201 or permission. NUR 200 or concurrently .

**Course Typically Offered:** Fall & Spring

Credits: 4

## **NUR 301 - Care of Adults II**

Presents scientific knowledge as the basis for professional practice of nursing. Functional health patterns are the basis of course organization. Students demonstrate psychomotor skills in the learning resource laboratory and begin clinical application of the nursing process in varied inpatient settings. A clinical case study approach is used to foster acquisition of critical thinking and professional role skills. Lec 3, Lab 3, Clin 6.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement. Nursing majors can satisfy three credits of the General Education Mathematics requirement by successfully completing NUR 200, NUR 201 and NUR 301.

**Prerequisites:** NUR 201, NUR 300. Junior standing in the School of Nursing.

**Corequisites:** NUR 404 and PSY 212

**Course Typically Offered:** Fall & Spring

Credits: 3

## **NUR 302 - Application of Theory to Nursing Practice II**

This laboratory based, skill building course prepares students to provide complex patient-centered care of adults with acute and chronic health problems. Students will develop the knowledge, skills and attitudes to meet selected core competencies of Q3238safe, high quality, evidence-based patient care. This laboratory course also provides students with the mathematics skills necessary to provide safe patient care. NOTE: This course is intended for students with Jr. standing in the School of Nursing and successful completion with at least a "C" in NUR 201 and NUR 300. Co-requisites for this course are: NUR 301, NUR 306 and NUR 316.

**General Education Requirements:** Students can satisfy three credits of the General Education Quantitative Literacy requirement by successfully completing NUR 200, NUR 201 and NUR 302

**Prerequisites:** Permission.

**Corequisites:** NUR 301, NUR 306 and NUR 316.

**Course Typically Offered:** Fall and Spring

Credits: 1

## **NUR 303 - Pathophysiology**

A study of the physiological, genetic and biochemical basis of disease.

**Prerequisites:** BIO 208 and Department Consent Required.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **NUR 304 - Concepts in Nursing for the Practitioner**

Focuses on the historical foundations of the nursing profession and important issues affecting nursing practice today. Students utilize critical thinking and nursing and other theories to reflect upon clinical practice. Emphasis is placed on oral and written communication skills. Lec 3.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** Registered Nurse and permission.

**Course Typically Offered:** Fall

Credits: 3

## **NUR 306 - Care of Adults II Clinical**

This course expands the student's understanding of the professional nursing role through the direct care of adults with acute and chronic health problems in a variety of clinical settings. Students continue to use knowledge, skills and attitudes gained from the sciences, humanities, and previous and concurrent nursing courses to provide high quality care that is based on standards of practice and current evidence. Students apply theoretical knowledge, clinical reasoning and complex nursing skills when implementing safe patient care (six clinical hours per week).

Note: This course is intended for students in the School of Nursing who are in Jr. standing and have successfully completed with a grade of at least a "C" in NUR 201, NUR 300 and NUR 303.

**Prerequisites:** Permission.

**Corequisites:** NUR 301, NUR 302 and NUR 316.

**Course Typically Offered:** Fall and Spring

Credits: 2

## **NUR 310 - Health Related Research**

Presents qualitative and quantitative research methods. Students evaluate research studies and consider the implications of research for nursing practice.

**Prerequisites:** MAT 232. Junior standing in the School of Nursing or permission of instructor.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **NUR 316 - Pharmacology for Nursing Practice**

This course prepares students to apply principles of pharmacotherapeutics in provision of evidence-based nursing interventions. Emphasis is on patient-centered care across the lifespan with special focus on patient safety, the use of health informatics, and on education of patients and their families for optimal health outcomes.

Note: This course is intended for Nursing majors with junior standing and have successfully completed with a grade of at least a C in NUR 201, NUR 303, BIO 208, BMB 207 and BMB 209

**Prerequisites:** Permission.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **NUR 320 - Nursing Care Management of Women, Infants and Families**

Focuses on the comprehensive care of women from adolescence through older adulthood. The reproductive process is examined as a part of the life cycle continuum and family health. Health promotion, and disease prevention and management concepts are emphasized as they apply to pregnancy, prenatal care, birth, and post-delivery period, newborn care, and parenting.

**Prerequisites:** CHF 201 and FSN 101 and NUR 301 and NUR 303 and NUR 404 and PSY 212.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **NUR 321 - Maternal, Newborn, and Women's Health Nursing Clinical**

Encompasses Obstetrical lab in the LRC for four hours and seven days (8 hrs per shift) on the maternity/newborn unit at Eastern Maine Medical Center. Students will be assigned to a community hospital of their choice for two days (8 hrs per day) and a primary care setting that serves women and their families (8 hrs per day). Total clinical hours 84. Students will register for one day of clinical per week and will complete all clinical assignments on that day.

**Prerequisites:** NUR 320.

**Corequisites:** NUR 320

**Course Typically Offered:** Fall & Spring

Credits: 2

## **NUR 330 - Nursing Care Management of Children and Families**

Students develop a comprehensive approach to the care of infants, children, adolescents and families. Utilize developmental approach in health promotion and care of pediatric patients with acute or chronic illness.

**Prerequisites:** Junior standing in the School of Nursing. CHF 201 and NUR 301 and NUR 404 and PSY 212 or permission.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **NUR 331 - Nursing Care Management of Children and Families Clinical**

Students utilize the nursing process to provide comprehensive nursing care for pediatric patients and families in acute and primary care settings.

**Prerequisites:** CHF 201 and FSN 101 and NUR 301 and NUR 404 and PSY 212 and (NUR 330 or concurrently.)

**Course Typically Offered:** Fall & Spring

Credits: 2

### **NUR 334 - Care of Adults III**

This course continues to extend the student's understanding of the knowledge, skills and attitudes required to provide holistic, evidenced-based care of adults with chronic and complex health concerns. Concepts of patient-centered care, quality improvement, safety, teamwork and collaboration, and informatics are highlighted with this patient population. Exemplars provide the basis for discussion of current research, evidence from clinical practice and best practice models for this patient population.

NOTE: This course is intended for students with Junior standing in the School of Nursing and successful completion with at least a grade of C in NUR 301 and NUR 404. Co-requisite: NUR 335.

**Corequisites:** NUR 335.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **NUR 335 - Care of Adults III Clinical**

This course continues to extend the student's understanding of the professional nursing role through the direct care of adults with chronic and complex health concerns in a variety of clinical settings. Students apply knowledge, skills and attitudes gained from the sciences, humanities, and previous and concurrent nursing courses to provide high quality care to adults based on standards of practice and current evidence. Students provide complex, high quality, safe patient care to acutely ill adults through the application of theoretical knowledge and clinical reasoning in a variety of settings.

NOTE: This course is intended for students in the School of Nursing with Junior standing and successful completion, with a grade of at least a C in NUR 301 and 316. NUR 334 should be taken as a Co-requisite.

**Course Typically Offered:** Fall & Spring

Credits: 2

### **NUR 340 - Psychiatric Mental Health Nursing**

Builds on previously learned knowledge to promote a greater understanding of the nurse's role in the care of clients who have mental health needs. Content includes an overview of mental illnesses and major treatment modalities, with an emphasis on the use of the nursing process in patient care. A major focus is the therapeutic use of relationship and communication skills in all health care settings.

NOTE: This course is intended for students in the School of Nursing with Junior standing and successful completion of NUR 301.

**Prerequisites:** Permission.

**Corequisites:** NUR 341.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **NUR 341 - Clinical Practice in Psychiatric Mental Health Nursing**

Clinical experiences offer students the opportunity to apply knowledge and skills in the direct care of patients. Helps students gain a greater understanding of mental illnesses and disorders, expand their knowledge of psychotropic medications, develop skills in therapeutic communication, and apply a broad range of therapeutic interventions that can be used in a variety of treatment settings. Students are expected to develop insight into their own preconceptions about mental illness, as well as greater self-awareness of personal responses to patient care situations.

**Prerequisites:** NUR 301 and Permission.

**Corequisites:** NUR 340 (may be taken prior to NUR 341).

**Course Typically Offered:** Fall & Spring

Credits: 2

### **NUR 357 - Experience in Community Health**

Exposes RN's to the role of the community health nurse and the community as client. Focuses on the health of aggregates

providing students with opportunities to develop expertise in health promotion, disease prevention health maintenance and restoration.

(Pass/Fail Grade Only.)

**Prerequisites:** NUR 320, NUR 321, NUR 330, NUR 331 and NUR 452.

**Corequisites:** NUR 452

**Course Typically Offered:** Fall & Spring

Credits: 2

### **NUR 365 - Healthcare Informatics**

This course provides foundational knowledge regarding informatics for health care professionals. Emphasis is placed on the knowledge and skill used in information management and patient care technology to deliver safe and effective patient-centered care.

Note: This course is intended for students in the School of Nursing with Jr. standing and who have successfully completed NUR 201 with a grade of at least a "C".

**Prerequisites:** Permission.

**Course Typically Offered:** Fall and Spring

Credits: 1

### **NUR 404 - Fundamentals of Pharmacology**

The basic concepts of pharmacology for health professionals, introducing pharmacodynamics and kinetics. Emphasis on clinical pharmacology of major drug categories and major drug interactions.

**Prerequisites:** For Nursing Majors; NUR 303, BMB 207/209, BMB 208/210, BIO 208.

**Corequisites:** NUR 301 or permission

**Course Typically Offered:** Fall & Spring

Credits: 3

### **NUR 409 - Professional Issues: Leadership and Organization**

Addresses health care policy within the framework of leadership and organizational theory, role and change theories. Students will have the opportunity to explore professional and ethical issues which affect the delivery of health care.



**Prerequisites:** NUR 304. Licensure as a registered nurse.

**Course Typically Offered:** Fall

Credits: 3

### **NUR 411 - RN Senior Seminar**

A senior synthesis seminar and clinical course for RN students, building on concepts from NUR 304 and NUR 410, as well as clinical experience and general education of the participants. Independent clinical experience and seminars provide an opportunity to synthesize clinical judgment skills, discuss critical reasoning, apply ethical decision making and integrate concepts of health promotion throughout the lifespan. Lec 2, Proj 3.

**General Education Requirements:** Satisfies the General Education Writing Intensive and Capstone Experience Requirements.

**Prerequisites:** NUR 304, NUR 310; permission.

**Course Typically Offered:** Spring

Credits: 4

### **NUR 413 - Nursing Care Management of Women, Infants and Families**

Focuses on the comprehensive care of women from adolescence through older adulthood. The reproductive process is examined as a part of the life cycle continuum and family health. Health promotion, and disease prevention and management concepts are emphasized as they apply to pregnancy, prenatal care, birth, and post-delivery period, newborn care, and parenting.

NOTE: This course is intended for students with Senior standing in the School of Nursing and successful completion of NUR 340.

**Corequisites:** NUR 414.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **NUR 414 - Maternal, Newborn, and Women's Health Nursing Clinical**

Students provide comprehensive family-centered care for childbearing families in acute and primary care settings. Students also have clinical simulation experiences in the School of Nursing Learning Resource Center.

NOTE: This course is intended for students in the School of Nursing with Senior standing and successful completion of NUR 304.

**Prerequisites:** Permission.

**Corequisites:** NUR 413 which may be taken prior to NUR 414.

**Course Typically Offered:** Fall & Spring

Credits: 1

### **NUR 415 - Socio-Cultural Issues in Health and Health Care**

Explores social and cultural influences on health and illness. Existing health disparities are examined, as well as, issues and trends in our health care delivery system. Transcultural nursing principles will be introduced. Offered via the Internet using Blackboard.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** Junior standing in School of Nursing or permission.

**Course Typically Offered:** Spring

Credits: 3

### **NUR 416 - Nursing Care Management of Children and Families**

Students develop a comprehensive approach to the care of infants, children, adolescents and families. Utilize developmental approach in health promotion and care of pediatric patients with acute or chronic illness.

NOTE: This course is intended for students with Senior standing in the School of Nursing and successful completion in NUR 340.

**Prerequisites:** Permission.

**Corequisites:** NUR 417.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **NUR 417 - Nursing Care Management of Children and Families**

Students utilize the nursing process to provide comprehensive nursing care for pediatric patients and families in acute and primary care settings.

NOTE: This course is intended for students in the School of Nursing with Senior Standing and successful completion of NUR 340.

**Prerequisites:** Permission.

**Corequisites:** NUR 416 (may be taken prior to NUR 417).

**Course Typically Offered:** Fall & Spring

Credits: 1

### **NUR 435 - Nursing Care of Patients and Families at End of Life**

This course further develops students' knowledge, skills and attitudes necessary to provide quality, patient-centered care at the end of life. Key recommendations from the American Association of Colleges of Nursing's Peaceful death: recommended competencies and curricular guidelines for end of life nursing care will be incorporated into the course.

Note: This course is intended for Seniors within the School of Nursing and who have successfully completed NUR 340 with a grade of at least a "C".

**Prerequisites:** Permission.

**Course Typically Offered:** Fall and Spring

Credits: 1

### **NUR 440 - Nursing Care Management of Adults II**

One of two senior level courses focusing on acute and chronic complex health problems with emphasis on major life threatening illnesses. Functional health patterns provide the basis for course organization. The role of the nurse in health promotion, illness management, independent and collaborative decision making, and professional issues encountered in practice are discussed in class. Lec 2.

**Prerequisites:** NUR 320, NUR 321, NUR 330, NUR 331 and NUR 404. Senior standing in School of Nursing and permission.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **NUR 441 - Nursing Care Management of Adults III**

A continuation of NUR 440. Content is organized on the basis of functional health patterns. The role of the nurse in regard to levels of illness prevention is presented. Nursing strategies relating to health promotion, maintenance and restoration are discussed. Lec 2.

**Prerequisites:** NUR 320, NUR 321, NUR 330, NUR 331 and NUR 404. Senior standing in School of Nursing and permission.

**Course Typically Offered:** Fall & Spring

Credits: 2

### **NUR 444 - Management and Leadership in Health Care System**

Provides the student with content focusing on knowledge and skills essential to the professional role of nursing. Organizational and leadership theories are presented as they relate to the practitioner as a member of a group. Theoretical concepts of group structure and interactions in groups are discussed. Change and role theories are introduced as tools for understanding group and organizational dynamics.

NOTE: This course is intended for students in the School of Nursing with Senior standing and who have successfully completed NUR 452.

**Prerequisites:** Permission.

**Corequisites:** NUR 455.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **NUR 447 - Clinical Reflection Seminar**

Utilizes discourse to foster interpersonal and group communication skills, group role-taking, critical thinking, reflection upon clinical practice and integration of theory with practice. Sem 3.

**General Education Requirements:** Satisfies the General Education Capstone Experience Requirement.

**Prerequisites:** Senior standing in School of Nursing.

**Corequisites:** NUR 455.

**Course Typically Offered:** Fall & Spring

Credits: 1

### **NUR 450 - Psychiatric Mental Health Nursing**

Builds on previously learned knowledge to promote a greater understanding of the nurse's role in the care of clients who have mental health needs. Content includes an overview of mental illnesses and major treatment modalities, with an emphasis on the use of the nursing process in patient care. A major focus is the therapeutic use of relationship and communication skills in all health care settings.

**Prerequisites:** Senior standing in the School of Nursing.

**Corequisites:** NUR 451

**Course Typically Offered:** Fall & Spring

Credits: 3

### **NUR 451 - Clinical Practice in Psychiatric Mental Health Nursing**

Clinical experiences offer students the opportunity to apply knowledge and skills in the direct care of patients. Helps students gain a greater understanding of mental illnesses and disorders, expand their knowledge of psychotropic medications, develop skills in therapeutic communication, and apply a broad range of therapeutic interventions that can be used in a variety of treatment settings. Students are expected to develop insight into their own preconceptions about mental illness, as well as greater self-awareness of personal responses to patient care situations.

**Prerequisites:** NUR 450 or concurrently.

**Course Typically Offered:** Fall & Spring

Credits: 2

### **NUR 452 - Community and Population Health**

Introduces students to the concepts and principles of community health care. Students will gain knowledge about communities and population health, health determinants, and epidemiology to assist clients in making choices that promote health and wholeness. Topics are population focused and take the form of health promotion, maintenance, and restoration. Students perform a population assessment, a cultural assessment, and propose community level interventions.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives and Population and the Environment Requirements.

**Prerequisites:** NUR 320, NUR 321, NUR 330 and NUR 331. Senior standing in the School of Nursing.

**Corequisites:** NUR 453

**Course Typically Offered:** Fall & Spring

Credits: 3

### **NUR 453 - Community Nursing Care Management**

Focus on concepts and principles of community health nursing. Students are introduced to the role of the community health nurse and the community as a client. Students will use the functional health patterns framework for nursing diagnoses of individuals, families and communities. Current issues influencing the health of communities are examined. The clinical focus includes health promotion, disease prevention, health maintenance and restoration. A variety of clinical experiences are offered in community

based settings.

**Prerequisites:** NUR 452 or concurrently. Senior standing in the School of Nursing.

**Course Typically Offered:** Fall & Spring

Credits: 2

## **NUR 454 - Clinical Adult Nursing Management**

Students provide direct care to patients with acute and chronic complex health problems with emphasis on major life-threatening illnesses. Functional health patterns provide the basis for course organization. The role of the nurse in health promotion, illness management, independent and collaborative decision making, and professional issues encountered in practice are implemented under the direction of faculty in the acute care setting.

**Prerequisites:** NUR 440 or NUR 441 or concurrently. Senior standing in the School of Nursing.

**Course Typically Offered:** Fall & Spring

Credits: 2

## **NUR 455 - Senior Clinical Practicum**

A capstone experience in which students apply knowledge gained from all prior semesters, including theoretical, clinical, and research knowledge for the provision of evidence-based, safe patient care. Students are partnered with expert nurses providing acute and chronic health care services in a variety of settings. Clin 16.

**General Education Requirements:** Satisfies the General Education Capstone Experience and Ethics Requirements.

**Prerequisites:** Senior standing in School of Nursing and permission.

**Corequisites:** NUR 444 and NUR 447.

**Course Typically Offered:** Fall & Spring

Credits: 4

## **NUR 495 - Independent Study in Nursing**

Individualized study with permission of the instructor. May or may not have an experiential component.

**Prerequisites:** permission of instructor.

**Course Typically Offered:** Fall & Spring

Credits: 1-3

### **NUR 497 - Projects in Nursing**

Individualized project with permission of the instructor. May or may not have an experiential component.

**Prerequisites:** permission.

**Course Typically Offered:** Fall & Spring

Credits: 1-3

### **ONE 012 - Onward Composition**

Students write essays based on readings in American history. Each student drafts six or seven essays, revises each with the help of peers, and finally presents the paper in the class. A review of grammar, sentence structure and punctuation makes up the editing part of the course.

**Course Typically Offered:** Fall

Credits: 3

### **ONM 011 - Pre-Algebra**

Operations including addition, subtraction, multiplication and division are reviewed and applied to fractions, decimals, percents and basic geometry. Briefly introduces signed numbers and simple linear equations.

**Prerequisites:** permission.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **ONM 012 - Introductory Algebra**

Topics include: graphing, writing and solving linear equations (including fractional equations), solving quadratic equations by factoring and by the quadratic formula, as well as practical applications.

**Prerequisites:** ONM 011 or permission.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **ONM 013 - Intermediate Algebra**

Solving radical and quadratic equations. An introduction to functions and their graphs, including conics. Logarithms and inequalities are introduced. Applications are stressed.

**Prerequisites:** ONM 012 or permission.

Credits: 3

### **ONO 011 - Onward Orientation I**

Assists the transition of students entering the University of Maine through the Onward Program. Topics include: Academic Requirements of the Onward Program and the University of Maine, Goal Setting, Learning Styles, Time Management, Note Taking, Test Taking, Stress Management, Self-esteem, Communication and Relationship Skills, Career Information, AIDS and Responsible Sexuality.  
(Pass/Fail Grade Only.)

**Prerequisites:** permission of instructor.

**Course Typically Offered:** Fall

Credits: 1

### **ONO 100 - Onward Orientation II**

Exploration of campus resources relevant to academic course work, majors and career choices. Builds strategies of achieving success at UMaine including study skills, basic computer skills, and self-awareness as it relates to academic competency.  
(Pass/Fail Grade Only.)

**Prerequisites:** ONO 011 or permission of instructor.

**Course Typically Offered:** Spring

Credits: 1

### **ONR 012 - Introduction to Academic Reading**



For students who are already reasonably proficient readers, but who lack the critical skills required for university level courses. Introduces text analysis and methods of critical thinking. Activities include discussion of assigned readings, short papers, as well as some emphasis on effective reading skills, vocabulary building, and exam preparation.

**Prerequisites:** ONR 011.

**Course Typically Offered:** Fall

Credits: 3

### **ONR 013 - Critical Reading**

For students who already have a beginning acquaintance with the methods of critical reading, but who need to refine and strengthen their skills in order to succeed in regular university courses. Activities include concentrated text analysis, oral and written presentations and independent library research.

**Prerequisites:** ONR 012 or permission.

**Course Typically Offered:** Spring

Credits: 3

### **ONS 011 - Onward Biology**

Understanding life begins with ecological relationships, including energy, nutrients, animal behavior and the ecology of populations. Then attention shifts to the unity of life, involving basic cell chemistry, the genetic basis of life and evolution. Lec 3, Lab 2.

**Prerequisites:** permission.

**Course Typically Offered:** Fall

Credits: 3

### **ONS 012 - Onward Chemistry**

Topics include measurements and calculations, matter and energy, chemical foundations and composition, nomenclature, reactions, quantities, modern atomic theory, bonding, gases, liquids and solids, solutions, acids and bases, equilibrium and oxidation-reduction.

**Prerequisites:** ONS 011 or permission.

**Course Typically Offered:** Spring

Credits: 3

### **ONS 014 - Onward Zoology**

Introduces biological diversity and classification of living things. Plant systems are studied as a key part of the living fabric of the earth. Much emphasis is placed on animal systems, including anatomy and physiology, embryology and reproduction.

**Prerequisites:** ONS 011 or permission.

**Course Typically Offered:** Spring

Credits: 3

### **PAX 201 - Introduction to Peace and Reconciliation Studies**

Introduces students to various concepts in the field of Peace and Reconciliation Studies. Topics include forms of violence and their relationship to social structure and cultural practices; global militarization and environmental destruction and their impact on human needs; and peace-making and conflict resolution at both micro and macro levels.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and Cultural Diversity and International Perspectives Requirements.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **PAX 250 - Peace and Pop Culture**

Incorporates case studies and creative expression by active artist-peace builders working in different media throughout the World. Students will investigate the sources, causes, processes and products that reside at the intersection of peace and popular culture. Students will interpret, analyze and evaluate examples from art, music, theater, dance, poetry, literature, museums, gardens, trails, film, television, magazine, cartoon, radio, Internet, video game, and comic book publishing industries.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions, Artistic and Creative Expression, and Writing Intensive Requirements.

**Course Typically Offered:** Fall & Summer

Credits: 3

### **PAX 260 - Realistic Pacifism**

Using the international examples of such pragmatic practitioners of non-violence as Gandhi, this course explores the promise and success of peacemaking. The broad influences of religion, democracy and social justice movement as applied to the struggle against global terrorism, and the ways in which these complex factors can converge to create a culture of forgiveness, reconciliation and restorative justice, will be the focus of the course.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and Writing Intensive Requirements.

**Course Typically Offered:** Spring

Credits: 3

### **PAX 290 - Nonviolence: Perceptions and Perspectives**

Nonviolence is a cornerstone of Peace and Reconciliation Studies, and a thorough understanding of the history, theory, and practice of the ideas and ethics relating to nonviolence is essential. This interdisciplinary course investigates the development of theories of nonviolence and philosophical, cultural, and religious perspectives on nonviolence. Examples of the practice of nonviolence from across the globe are highlighted, and the skills and tools necessary for the ethical practice of nonviolence and the creation of cultures of peace are investigated. This course is required for the Peace and Reconciliation Studies minor and certificates.

**General Education Requirements:** Satisfies the General Education Requirements in Cultural Diversity and International Perspectives and in Ethics.

**Course Typically Offered:** Spring

Credits: 3

### **PAX 350 - Buddhism, Peace and Contemplative Traditions**

An introduction to Buddhism and its relationship to Zen and Western contemplative traditions. Some philosophical aspects of Buddhism as well as stories, sutras, ethical precepts, relationship to ecological concerns and the embodying of the Way in our daily lives.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Course Typically Offered:** Fall & Summer

Credits: 3

### **PAX 351 - This Sacred Earth: Ecology and Spirituality**

Examines Eastern and Western views on the environment in terms of spiritual traditions. A major part of the course addresses a new approach to spirituality of nature, called Deep Ecology which includes ecotheology and ecofeminist spirituality.

**General Education Requirements:** Satisfies the General Education Ethics Requirement.

**Course Typically Offered:** Spring

Credits: 3

### **PAX 360 - Conflict Resolution: A Relational Approach To Working Through Conflict**

Emphasis on alignment of premises, practices and policies that have shaped the field on the local, national and international levels.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions Requirement.

**Course Typically Offered:** Spring

Credits: 3

### **PAX 370 - Building Sustainable Communities**

Explores the essential ideas and necessary institutions for building sustainable communities including social, cultural and physical environments. Specific examples of sustainable communities and eco-villages worldwide will be highlighted.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirements.

**Course Typically Offered:** Fall

Credits: 3

### **PAX 380 - Ecovillages and Ecocities: Models of Global Restoration**

This course explores the essential ideas for a transition to an environmental century by investigating global ecovillages and ecocities as guides to sustainable communities.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives and Population and the Environment requirements.

**Prerequisites:** None.

**Course Typically Offered:** Spring

Credits: 3

### **PAX 398 - Topics in Peace and Reconciliation Studies**

Explores peace and reconciliation studies through more in-depth study of specific topics drawn from the introductory course, such as the roles of technology, religion, gender, ethnicity and social stratification in the establishment and maintenance of peace and reconciliation studies. May be repeated for credit.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **PAX 400 - Martin Luther King and the Promise of Social Renewal**

The just community is a distinctively American idea, beginning with the vision of the Founders and renewed in the writings of Martin Luther King, Jr. in envisioning an America - and a world - at peace through principles of social justice, reconciliation, non-violence and equality. This course looks at the concept of King's Beloved Community as a way to peace through a multidisciplinary investigation focusing on the Civil Rights Movement and after, using the lens of multiple faith and ethically-based aspirations for community.

**General Education Requirements:** Satisfies the General Education Social Context and Institutions and Cultural Diversity and International Perspectives requirements.

**Prerequisites:** One of the following: BLS 101, MLC 175, PAX 201, SOC 101, SOC 201, WST 101 or permission.

**Course Typically Offered:** Variable

Credits: 3

### **PAX 401 - Women Social Activists: Warriors for Peace and Justice**

This course examines the lives of a diverse group of women who were committed activists attempting to create change. It examines the historical, social, and political circumstances that motivated these women to actively seek social transformation. It also looks at what some of the current generation of women activists/feminists have to say about peace and social justice issues.

**General Education Requirements:** Satisfies the General Education Social Context and Institutions and Cultural Diversity and International Perspectives requirements.

**Prerequisites:** PAX 201 or WST 101 or permission.

**Course Typically Offered:** Fall

Credits: 3

## **PAX 410 - Theories in Peace and Reconciliation Studies**

An exploration and critical discussion of historical and contemporary theories about conflict, peace, and reconciliation. Course offered via WebCT.

**Prerequisites:** PAX 201 or permission.

**Course Typically Offered:** Spring

Credits: 3

## **PAX 451 - Mediation: Its Premises, Practices and Policies**

Introduces students to the theory and practice of mediation. Participants will reflect together on the nature and origins of conflict and its impact on society and individuals. Students will acquire and practice the skills needed for effective conflict management.

**Course Typically Offered:** Spring

Credits: 3

## **PAX 452 - Advanced Study in Transformative Mediation**

Students will deepen their understanding of the premises and principles of the transformative orientation to mediation practice. Students will consider how values and belief systems impact the development of mediation models or schools of thought. Includes skills development through intensive coaching.

**Prerequisites:** PAX 451 or permission.

**Course Typically Offered:** Spring

Credits: 3

## **PAX 470 - Sustainable Communication: The Theory and Practice of Nonviolent Communication**

This three credit interdisciplinary course combines the principles of Peace and Reconciliation Studies with cutting edge work in conflict transformation and reconciliation through dialogue. Based on the work of clinical psychologist Marshall Rosenberg, participants will investigate and practice the Nonviolent Communication (NVC) process he developed. The course will provide participants with concrete skills in thinking and speaking which are necessary for analyzing and addressing conflict in a variety of settings. The goal is to increase peace in themselves, their personal and work communities, and the world. Additionally, a goal

is to provide students with specific tools to work collaboratively within any team experience to enhance the likelihood of success in any future endeavor through building a process to maintain and sustain efforts for the long term.

This process is beneficial for enhancing and sustaining peace, good will, and collaboration among people who work in education, health care, social work, psychology, international relations, sustainable community development, human development, mediation and conflict resolution, the creative arts and business. The skills learned are useful in personal and family relationships.

**Prerequisites:** None.

**Course Typically Offered:** Summer

Credits: 3

### **PAX 491 - Forgiveness: Creating a Culture of Peace and Reconciliation**

How do we forgive those we consider enemies? Are there limits to forgiveness? Can we learn forgiveness? These questions form the core of the class journey as it explores forgiveness from academic, personal, historical and cultural perspectives. Through reading, writing, conversation and other forums, it looks at forgiveness as a tool for peace building.

**General Education Requirements:** Satisfies the General Education Ethics and Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** PAX 201 or permission.

**Course Typically Offered:** Spring

Credits: 3

### **PAX 495 - Advanced Topics in Peace and Reconciliation Studies**

An advanced, interdisciplinary study of topics such as "Peace Education," "Conflict Resolution in the Schools," "Diversity Education," etc. May be repeated for credit.

**Prerequisites:** PAX 201 or permission.

**Course Typically Offered:** Variable

Credits: 3

### **PAX 498 - Special Projects in Peace and Reconciliation Studies**

Advanced individual study, research and written projects in Peace and Reconciliation Studies and related areas, conducted under the guidance of a faculty member associated with the Peace and Reconciliation Studies Program. Arranged on request. May be

repeated for credit.

**Prerequisites:** PAX 201 or permission.

**Course Typically Offered:** Variable

Credits: 1-6

## **PHI 100 - Contemporary Moral Problems**

Examines a variety of moral problems causing controversy in contemporary society. Focuses on evaluating arguments for and against competing solutions to these problems. Also discusses different philosophical strategies for thinking about moral obligations and relationships. Topics surveyed may include: abortion, affirmative action, euthanasia, feminism, the environment, capital punishment, welfare and aid to the needy, technology, war and racism, among others.

**General Education Requirements:** Satisfies the General Education Ethics, Western Cultural Tradition and Social Contexts and Institutions Requirements.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **PHI 102 - Introduction to Philosophy**

An introduction to philosophical thought and critical thinking through a reading of works from the philosophical tradition. Readings might include works from philosophers such as Plato, Aristotle, Augustine, Descartes, Hume, Locke, Kant, Marx, Nietzsche and/or other great works of philosophy. Questions will be asked about the nature of wisdom and knowledge, the essence of reality and of ideas, human nature, virtue and community, justice and political life.

**General Education Requirements:** Satisfies the General Education Ethics and Western Cultural Tradition Requirements.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **PHI 103 - Methods of Reasoning**

A study of principles used to distinguish correct from incorrect reasoning including the nature of thought, uses of language, recognition of arguments, informal fallacies, purposes and types of definition, deduction and induction. Emphasis on understanding and mastering through practice some fundamental techniques for testing the soundness of many different kinds of reasoning.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition Requirement.



**Course Typically Offered:** Spring

Credits: 3

### **PHI 104 - Existentialism and Literature**

A critical study of philosophical significance of individual choices and actions involving questions of personal identity, responsibility and authenticity as these themes are developed in existentialist literature. Special attention will be given to existentialist literary techniques.

**General Education Requirements:** Satisfies the General Education Ethics, Western Cultural Tradition and Artistic and Creative Expression Requirements.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **PHI 105 - Introduction to Religious Studies**

An analysis of religion as an expression of human culture past and present. Considers institutional and non-institutional manifestations of religion as conveyed through myth and symbol, religious experience, struggle for societal change, mysticism, and quests for the articulation of human values. Inquiry by various disciplines will be considered, e.g., anthropology, psychology, sociology, history, philosophy, and theology.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Social Contexts and Institutions Requirements.

**Course Typically Offered:** Fall

Credits: 3

### **PHI 200 - Problems in Recent Philosophy**

Study of recent philosophical work in ethics, social philosophy, philosophy of mind, philosophy of religion with an emphasis on epistemological and metaphysical issues that are raised in this work.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition Requirement.

**Prerequisites:** one course in philosophy or permission.

**Course Typically Offered:** Variable

Credits: 3

## **PHI 210 - History of Ancient Philosophy**

An analysis of Hellenic philosophy with emphasis on Plato and Aristotle, including Presocratic philosophy, Platonism, Aristotelianism, Stoicism and Epicureanism.

**General Education Requirements:** Satisfies the General Education Ethics, Western Cultural Tradition Requirements.

**Prerequisites:** no first-year students or permission.

**Course Typically Offered:** Fall

Credits: 3

## **PHI 212 - Hegel and 19th Century Philosophy**

A study of the philosophy of Hegel and related 19th Century philosophies that consider the historical and situational character of consciousness and knowledge. Explores the implications for areas of human existence such as ethics, politics, art, economics, and science. Additional authors considered may include Kant, Schiller, Nietzsche, and Marx.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Social Contexts and Institutions Requirements.

**Prerequisites:** Sophomore standing or permission.

**Course Typically Offered:** Variable

Credits: 3

## **PHI 214 - 20th Century Continental Philosophy**

A study of some of the most influential thinkers in 20th Century Continental Philosophy. Explores themes central to this area of philosophy including the nature of self-identity, our ability to understand ourselves and our motivations, the social and political character of this understanding, and the implications of these themes for our understanding of such areas of human existence as ethics, art, and politics. Authors considered in the course may include Freud, Sartre, Marcuse, Foucault, Deleuze, Derrida, de Beauvoir, and Judith Butler.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Social Contexts and Institutions Requirements.

**Prerequisites:** Sophomore standing or permission.

**Course Typically Offered:** Variable

Credits: 3

## **PHI 223 - Modern Jewish Thought**

Modern trends in Jewish thought from the Enlightenment to the present. Primary attention is given to Jewish philosophers who formulated significant responses to modernity including new-Kantian rationalism, Zionism, religious naturalism, existentialism, post-Holocaust theology, mysticism, postmodernism and feminist theology.

**General Education Requirements:** Satisfies the General Education Ethics, Western Cultural Tradition and Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** Sophomore standing or permission.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

## **PHI 230 - Ethics**

Readings and discussions of works by Aristotle, Mill, Kant, Nietzsche and other moral philosophers. In each case, the nature of the system, its summum bonum and defense is examined, criticized, and tested for its applicability to personal and public ethical predicaments.

**General Education Requirements:** Satisfies the General Education Ethics and Western Cultural Tradition Requirements.

**Prerequisites:** no first-year students or one course in philosophy.

**Course Typically Offered:** Variable

Credits: 3

## **PHI 231 - Topics in Applied Ethics**

Deals with the ethical issues in various professions and practices such as business, law, agriculture, government, science, teaching and journalism. Different sections may focus on specific professions or problem areas (e.g., Business Ethics, Environmental Ethics, etc..)

**General Education Requirements:** Satisfies the General Education Ethics, Western Cultural Tradition and Social Contexts and Institutions Requirements.

**Prerequisites:** One course in Philosophy or Sophomore Standing.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

## **PHI 232 - Environmental Ethics**

A critical survey of major contemporary discussions of human relationships to nature and the causes of the environmental crisis. Topics will include animal rights, biocentrism, deep ecology, ecofeminism, bio-regionalism, social ecology and sustainability. Special attention will be given to building an ethical vocabulary for interpreting the place of humans in relation to the non-human.

**General Education Requirements:** Satisfies the General Education Ethics, Social Contexts and Institutions and Population and the Environment Requirements.

**Prerequisites:** no first-year students or one course in philosophy.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **PHI 233 - Business Ethics**

Corporations and commerce exert a powerful influence on contemporary societies. Examines ethical and political problems created by a commercial culture and discusses related ethical and political theories. Addresses such questions as: Is the only business of business to make a profit? What ethical obligations should corporations respect? Should business be expected to work for an environmentally sustainable society? Is our commercial culture just? What are the rights of employees and communities? What are the appropriate roles of business and politics in a just society? Case studies provide some real world examples for discussion.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and Ethics Requirements.

**Prerequisites:** no first-year students.

**Course Typically Offered:** Variable

Credits: 3

## **PHI 235 - Biomedical Ethics**

Investigates physician, nursing, and hospital codes of conduct, the physician/patient relationship, concepts of health/disease, procreation/abortion decisions, genetics/reproductive technologies, health resources/social justice allocations, and other ethical dimensions of medical practice.

**General Education Requirements:** Satisfies the General Education Ethics, Western Cultural Tradition and Social Contexts and Institutions Requirements.

**Prerequisites:** no first-year students.

**Course Typically Offered:** Fall

Credits: 3

### **PHI 236 - Feminist Ethical, Social and Political Theory**

A survey of the major feminist theoretical frameworks with emphasis on their respective practical implications in the areas of work, family life and sexuality.

**General Education Requirements:** Satisfies the General Education Ethics, Western Cultural Tradition, Social Contexts and Institutions and Cultural Diversity and International Perspectives Requirements.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **PHI 240 - Social and Political Philosophy**

A critical study of major social and political philosophers from Plato to the present in light of their ethical and metaphysical systems. Topics include the problem of justice, the nature of the state and its relationship to other social institutions, and the individual. The primary focus will be on normative rather than descriptive theory.

**General Education Requirements:** Satisfies the General Education Ethics, Western Cultural Tradition Requirements.

**Prerequisites:** no first-year students or permission.

**Course Typically Offered:** Fall

Credits: 3

### **PHI 244 - Philosophy of Law**

Topics include the nature of law, the limits of law, and legal responsibility. Special emphasis on selected cases in American legal history, the law of contracts and torts, positivism, goal-based, rights-based and feminist jurisprudence.

**General Education Requirements:** Satisfies the General Education Ethics, Western Cultural Tradition and Social Contexts and Institutions Requirements.

**Prerequisites:** no first-year students or permission.

**Course Typically Offered:** Variable

Credits: 3

## **PHI 250 - Formal Logic**

An introductory course in modern symbolic logic. Techniques of deductive inference, including decision procedures and axiomatization, are studied in developing the propositional and predicative logics. Some attention is given to metalogic and the philosophy of logic.

**General Education Requirements:** Satisfies the General Education Mathematics and Western Cultural Tradition Requirements.

**Prerequisites:** no first-year students.

**Course Typically Offered:** Fall

Credits: 3

## **PHI 260 - Philosophy of Language**

A study of major contemporary theories of language. Topics include the nature of meaning, uses of language, conventions in language, the nature of grammar, syntax and semantics. Philosophers studied include Searle, Quine and Chomsky, among others.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition Requirement.

**Prerequisites:** no first-year students or permission.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

## **PHI 262 - Philosophy of Art**

An investigation of the nature and importance of aesthetic experience and its objects, the possibility of standards of art and taste, and the relation of art to other areas of experience. Topics include art and morality, art and science, art and the environment. Readings from Tolstoy, Hume, Dewey, Langer, Bell, Danto, Dickie and Beardsley, among others.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Artistic and Creative Expression Requirements.

**Prerequisites:** no first-year students or permission.

**Course Typically Offered:** Variable

Credits: 3

## **PHI 286 - Religions and Philosophies of the East: Hinduism**

The religious and philosophical foundations of Hinduism. Readings include the Vedas, the Bhagavad-Gita, the Upanishads, Yoga, and Vedanta.

**General Education Requirements:** Satisfies the General Education Ethics and Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** no first-year students.

**Course Typically Offered:** Fall

Credits: 3

## **PHI 287 - Religions and Philosophies of the East: Buddhism**

The religious and philosophical foundations of Buddhism including the basic teachings of the Buddha (Four Noble Truths, Noble Eightfold Path, Dependent Origination, etc.), Buddhist ethics, Buddhist meditation, and some later religious and philosophical developments.

**General Education Requirements:** Satisfies the General Education Ethics, Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** no first-year students.

**Course Typically Offered:** Spring

Credits: 3

## **PHI 312 - History of Modern Philosophy**

An interpretation of modern philosophy from Bacon and Descartes in the 17th century, developing through 18th century rationalism and empiricism and culminating in the system of Kant.

**General Education Requirements:** Satisfies the General Education Ethics, Western Cultural Tradition Requirements.

**Prerequisites:** one course in philosophy or permission.

**Course Typically Offered:** Spring

Credits: 3

## **PHI 317 - Existentialism and Phenomenology**

A critical study of the philosophical significance of individual choices and actions, including questions of personal identity, responsibility, authenticity and the ways in which those aspects of human experience are described. Readings include texts by Nietzsche, Heidegger, Sartre, Merleau-Ponty and contemporary authors, who conduct existential and phenomenological investigations of race, class and gender.

**General Education Requirements:** Satisfies the General Education Ethics, Western Cultural Tradition and Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** at least one course in philosophy, excluding PHI 103.

**Course Typically Offered:** Variable

Credits: 3

### **PHI 342 - Marxist Philosophy I: The Philosophy of Karl Marx**

Special attention is given to the Marxist theory of knowledge, ethics, political and social philosophy as formulated by Karl Marx in his theory of knowledge, ethics, economics and political philosophy. Additional readings from Friedrich Engels and Mao Zedong.

**General Education Requirements:** Satisfies the General Education Ethics and Western Cultural Tradition Requirements.

**Prerequisites:** one course in philosophy or permission.

**Course Typically Offered:** Fall

Credits: 3

### **PHI 344 - Theories of Justice**

A critical study of recent theories of social justice including utilitarian, social contract, entitlement, communitarian, feminist and postmodern approaches, and spanning the political spectrum from libertarianism to socialism. Topics include distribution of wealth and power, affirmative action, censorship and pornography and international justice.

**General Education Requirements:** Satisfies the General Education Ethics, Western Cultural Tradition and Writing Intensive Requirements.

**Prerequisites:** one course in philosophy or permission.

**Course Typically Offered:** Variable

Credits: 3

### **PHI 345 - Global Justice**



A study of moral and political philosophies developed in response to the issues and challenges raised by political, economic, and technological globalization. These include such topics as sovereignty and self-determination, global institutions and democracy, nationalism and cosmopolitanism, poverty and international or global distributive justice, fair trade, intellectual property rights, global environmental justice, domestic institutions and responsibility for global injustice, human rights and cultural diversity, women and global justice, immigration, war, humanitarian intervention and terrorism.

**General Education Requirements:** Satisfies the General Education Ethics and Social Contexts and Institutions Requirements.

**Prerequisites:** One course in Philosophy.

**Course Typically Offered:** Variable

Credits: 3

### **PHI 346 - The Philosophy of Mahatma Gandhi**

With a major focus on Gandhi's ethics as the basis of his philosophy and religion, this course uses writings by Gandhi and Gandhi's scholars to examine his philosophy of truth and nonviolence, nonviolent activism, social and political philosophy, religious philosophy, multiculturalism and unity with a respect for diversity.

**General Education Requirements:** Satisfies the General Education Ethics, Cultural Diversity and International Perspectives, and Writing Intensive Requirements.

**Prerequisites:** One course in Philosophy.

**Course Typically Offered:** Variable

Credits: 3

### **PHI 351 - Topics in Philosophy and Literature**

Surveys the relationship between philosophy and literature. Asks how reading literature contributes to philosophical understanding. Also explores literary challenges to traditional philosophy. Specific topics will vary with the instructor.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Prerequisites:** no first-year students and one course in philosophy.

**Course Typically Offered:** Variable

Credits: 3

### **PHI 353 - Philosophy of Mind**

New developments in behavioral science such as Cognitive Science and Mind-Brain Identity Theory bring this science and philosophy even closer together than earlier developments such as S-R, Operant Conditioning or Cognitive Dissonance theories. The rise of Cognitive Science in philosophy, psychology, computer science, linguistics.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Social Contexts and Institutions Requirements.

**Prerequisites:** one course in philosophy or permission.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **PHI 364 - Views of Self: East and West**

An examination of major concepts of self: traditional views, both East and West; recent research from anthropology, sociology, psychology and other disciplines; Marxist, socialist, feminist and other critiques of dominant Western philosophical views; and comparative cultural studies.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition, Cultural Diversity and International Perspectives and Writing Intensive Requirements.

**Prerequisites:** one course in philosophy or permission.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **PHI 382 - Theories of Myth**

Examines theories of such interpreters of myth as Cassirer, Malinowski, Levi-Strauss, Jung and Eliade. Explores the renewed interest in myth in philosophy, religious studies, anthropology and other disciplines, as well as in the general culture.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition, Cultural Diversity and International Perspectives and Writing Intensive Requirements.

**Prerequisites:** junior or senior standing or one course in philosophy or permission.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **PHI 420 - Topics in Recent Continental Philosophy**

A critical study of topics addressed by major movements and thinkers in continental philosophy since the turn of the century. Readings include works by Husserl, Heidegger, Sartre, de Beauvoir, Merleau-Ponty, Levi-Strauss, Derrida, Lacan, Foucault, Habermas and Gadamer.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition Requirement.

**Prerequisites:** one course in philosophy or permission.

**Course Typically Offered:** Variable

Credits: 3

### **PHI 431 - Advanced Topics in the Philosophy of Art**

A study of issues relating to the nature of art, its political and cultural significance, and its place in human life. Readings will be drawn from the history of philosophy and also from art history and art criticism. In different years, the course could focus on debates in the history of philosophy, on current approaches to art, on a particular artistic theory, or on a specialized theme in the philosophy of art. This course is valuable both for students in philosophy and for students working in art history or fine art.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Prerequisites:** Junior standing or permission.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **PHI 432 - Environmental Philosophy and Policy**

A critical study of issues in environmental ethics and philosophy, with special emphasis on exploring ethical problems in areas such as technology, agriculture, economics, urban design and development, resource management, biodiversity or genetic engineering. Special attention will be given to discussion of environmental justice and the social and political implications of public policy.

**General Education Requirements:** Satisfies the General Education Ethics, Social Contexts and Institutions, Population and the Environment and Writing Intensive Requirements.

**Prerequisites:** junior, senior or graduate standing or PHI 232.

**Course Typically Offered:** Spring

Credits: 3

### **PHI 465 - Advanced Topics in Philosophy**

Individual and small group study of problems or systems of philosophical concern relying on careful use of major philosophical resources, as well as attempts at fresh exploration of fundamental topics. Topics vary. May be repeated for credit when different philosophers or problems are studied.

Prerequisite: one course in philosophy or permission; junior or senior standing.

**Course Typically Offered:** Variable

Credits: 3

### **PHI 466 - Readings in Philosophy**

Individual study of a selected topic, agreed upon by the student and the instructor. Designed to address advanced issues not covered in normal offerings.

**Prerequisites:** 9 hours in philosophy and permission of department and instructor.

**Course Typically Offered:** Fall & Spring

Credits: 1-3

### **PHI 475 - Junior/Senior Philosophy Seminar**

One semester of study is required for all philosophy majors. Normally offered each semester with topics of study varied depending upon the instructor and student interest. Provides upper-level philosophical study shared by philosophy majors and other students with an interest in advanced philosophical learning.

**General Education Requirements:** Satisfies the General Education Writing Intensive and Capstone Experience Requirements.

**Prerequisites:** 3 courses in philosophy; junior or senior standing.

**Course Typically Offered:** Spring

Credits: 3

### **PHY 100 - Introduction to Physics and Astronomy**

Introduces first-year physics and engineering physics students to the professions and opportunities in physics, engineering physics, and astronomy, including departmental faculty, research opportunities, and facilities. In addition to discipline specific information, the course will introduce students to departmental, college, and university resources that will help them succeed in their education.

(Pass/Fail Grade Only.)

**Prerequisites:** First-year standing within the BA or BS in Physics or the BS in Engineering Physics or permission.

**Course Typically Offered:** Fall

Credits: 1

### **PHY 101 - Physics by Inquiry I**

A basic "hands-on" inquiry course. Students make observations in the laboratory which provide a basis for constructing physical concepts and developing the reasoning skills necessary to apply them to simple phenomena. Each semester, two or three topics will be chosen from the following list: properties of matter, observational astronomy, heat and temperature, light and optics (including color), electricity and magnetism and kinematics.

**General Education Requirements:** Satisfies the General Education Lab in the Basic or Applied Sciences Requirement.

**Prerequisites:** Education majors or permission of instructor.

**Course Typically Offered:** Fall

Credits: 4

### **PHY 102 - Physics by Inquiry II**

A basic "hands-on" inquiry course. Students make observations in the laboratory which provide a basis for constructing physical concepts and developing the reasoning skills necessary to apply them to simple phenomena. Each semester, two or three topics will be chosen from the following list: properties of matter, observational astronomy, heat and temperature, light and optics (including color), electricity and magnetism and kinematics. (NOTE: PHY 101 is NOT a prerequisite for PHY 102. Different topics will be covered.

**General Education Requirements:** Satisfies the General Education Lab in the Basic or Applied Sciences Requirement.

**Prerequisites:** Education majors or permission of instructor.

**Course Typically Offered:** Spring

Credits: 4

### **PHY 105 - Descriptive Physics**

A introduction to basic concepts of physics intended for the non-science major. Lec w/dem 3, Lab 3.

**General Education Requirements:** Satisfies the General Education Lab in the Basic or Applied Sciences Requirement.

**Course Typically Offered:** Fall

Credits: 4

### **PHY 107 - Technical Physics I**

An introduction to the basic concepts of mechanics and heat with illustrations taken from technical applications. Algebra and trigonometry are used. Intended for Engineering Technology students. NOTE: Because of overlapping subject matter, no more than four (4) degree credits are allowed for any combination of PHY 107, PHY 111 and PHY 121. Lec 2, Rec 1, Workshop 1, Lab 2.

**General Education Requirements:** Satisfies the General Education Lab in the Basic or Applied Sciences Requirement.

**Course Typically Offered:** Fall

Credits: 4

### **PHY 108 - Technical Physics II**

An introduction to the basic concepts of electricity, magnetism and light with illustrations taken from technical applications. Algebra and trigonometry are used. Intended for Engineering Technology students. NOTE: Because of overlapping subject matter, no more than four (4) degree credits are allowed for any combination of PHY 108, PHY 112 and PHY 122. Lec 2, Rec 1, Workshop 1, Lab 2.

**General Education Requirements:** Satisfies the General Education Lab in the Basic or Applied Sciences Requirement.

**Prerequisites:** PHY 107.

**Course Typically Offered:** Spring

Credits: 4

### **PHY 111 - General Physics I**

An introduction to the principles of mechanics, energy, heat, sound and properties of matter. Designed for science majors as well as premedical and pre dental students. No calculus. A working knowledge of algebra and trigonometry is required. NOTE: Because of overlapping subject matter, no more than four (4) degree credits are allowed for any combination of PHY 107, PHY 111 and PHY 121. Lec w/dem 2, Rec 1, Workshop 1, Lab 2.

**General Education Requirements:** Satisfies the General Education Lab in the Basic or Applied Sciences Requirement.

**Course Typically Offered:** Fall & Summer

Credits: 4

## **PHY 112 - General Physics II**

A continuation of PHY 111. Introducing electricity, magnetism, optics and atomic, nuclear, and quantum physics. NOTE: Because of overlapping subject matter, no more than four (4) degree credits are allowed for any combination of PHY 108, PHY 112 and PHY 122. Lec w/dem 2, Rec 1, Wkshp 1, Lab 2.

**General Education Requirements:** Satisfies the General Education Lab in the Basic or Applied Sciences Requirement.

**Prerequisites:** PHY 111.

**Course Typically Offered:** Spring, Summer

Credits: 4

## **PHY 121 - Physics for Engineers and Physical Scientists I**

An introductory calculus-based physics course, primarily serving students majoring in engineering or the physical sciences. Treats mechanics and acoustics. NOTE: Because of overlapping subject matter, no more than four (4) degree credits are allowed for any combination of PHY 107, PHY 111 and PHY 121. Lec w/dem 2, Rec 1, Workshop 1, Lab 2.

**General Education Requirements:** Satisfies the General Education Lab in the Basic or Applied Sciences Requirement.

**Prerequisites:** MAT 126 or concurrently.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 4

## **PHY 122 - Physics for Engineers and Physical Scientists II**

A continuation of PHY 121 including electricity, magnetism, and optics. NOTE: Because of overlapping subject matter, no more than four (4) degree credits are allowed for any combination of PHY 108, PHY 112 and PHY 122. Lec w/dem 2, Rec 1, Workshop 1, Lab 2.

**General Education Requirements:** Satisfies the General Education Science Basic or Applied Sciences Requirement.

**Prerequisites:** MAT 126 and PHY 121.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 4

## **PHY 200 - Career Preparation in Physics and Engineering Physics I**

A sophomore level course required of all physics and engineering physics majors. An introduction to the professions of physics and engineering physics, including the ethical standards of professional practice. Technical communication skills and practice in working on teams are developed through projects, presentations, and class discussions of contemporary issues and strategies to enhance professional qualifications.

**Prerequisites:** Sophomore standing.

**Course Typically Offered:** Spring

Credits: 1

## **PHY 223 - Special Relativity**

The basic principles of special relativity with a primary emphasis on mechanics. Lec 1.

**Prerequisites:** MAT 126 and PHY 112 or PHY 122.

**Course Typically Offered:** Spring

Credits: 1

## **PHY 224 - Special Relativity Laboratory**

Experiments illustrating the major predictions of the Theory of Special Relativity.

**Prerequisites:** PHY 229 and PHY 236 or permission of instructor.

**Corequisites:** PHY 223

**Course Typically Offered:** Spring

Credits: 1 - 3

## **PHY 229 - Physical Measurements Laboratory I**

Experiments primarily in modern physics. Normally taken with PHY 236. Lab 2.

**Prerequisites:** MAT 127 and PHY 112 or PHY 122.

**Course Typically Offered:** Fall



Credits: 2

### **PHY 230 - Physical Measurements Laboratory II**

Consists primarily of physical measurement techniques in mechanics. Normally taken with PHY 238. Lab 2.

**Prerequisites:** MAT 127 and PHY 112 or PHY 122.

**Course Typically Offered:** Spring

Credits: 2

### **PHY 236 - Introductory Quantum Physics**

The basic principles of quantum theory, atomic structure, nuclear structure, and some aspects of molecular, solid state, and elementary particle physics. Lec 3.

**Prerequisites:** MAT 127 and PHY 112 or PHY 122.

**Course Typically Offered:** Fall

Credits: 3

### **PHY 238 - Mechanics**

A detailed treatment of Newtonian mechanics. Newton's laws, work-energy theorem, impulse-momentum theorem, particle motion in a plane, linear oscillator, coupled oscillators, rigid body rotation, small oscillations and potential methods. Lec 3.

**Prerequisites:** PHY 111 or PHY 121.

**Corequisites:** MAT 258 or MAT 259.

**Course Typically Offered:** Spring

Credits: 3

### **PHY 400 - Career Preparation in Physics and Engineering Physics II**

A senior level course required of all physics and engineering physics majors. Refinement of technical communication skills

through projects, presentations and class discussions of contemporary issues in science and engineering and strategies for career enhancement after graduation.

**General Education Requirements:** Together with PHY 481 or PHY 482, this course Satisfies the General Education Capstone Experience Requirement.

**Prerequisites:** PHY 200; senior standing.

**Course Typically Offered:** Fall

Credits: 1

### **PHY 441 - Physical Electronics Laboratory**

Theories and practices in the measurement of physical quantities using both analog and digital techniques. Primarily for physics and engineering physics majors; others admitted by permission. Lab 4.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement when combined with PHY 442.

**Course Typically Offered:** Fall

Credits: 2

### **PHY 442 - Modern Experimental Physics**

Experiments selected from various topics in physics including x-ray diffraction, microwaves, nuclear magnetic resonance, Hall effect, etc. Students develop their own experiments. Normally taken by junior physics and engineering physics majors.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement when combined with PHY 441.

**Prerequisites:** MAT 228 and PHY 236.

**Course Typically Offered:** Spring

Credits: 2

### **PHY 447 - Molecular Biophysics**

An introduction to physical properties of biological macromolecules including proteins, nucleic acids and membranes. Solution thermodynamics developed as needed. Some statistical mechanics introduced. Topics include macromolecular structure, dynamics and functions, inter- and intra-molecular interactions, ligand binding equilibria, helix-coil transitions, physical techniques used in biophysics such as calorimetry, X-ray diffraction, optical and magnetic resonance spectroscopy. Four credit

version contains additional term project to be arranged with instructor.

**Prerequisites:** CHY 121 and MAT 126 and PHY 112 or PHY 122 or permission.

**Course Typically Offered:** Spring

Credits: 3 - 4

### **PHY 454 - Electricity and Magnetism I**

An intermediate level course in the fundamentals of the theory of electricity and magnetism. Treats electrostatics and magnetostatics, both in vacuum and in matter. Rec 3.

**Prerequisites:** PHY 112 or PHY 122.

**Corequisites:** PHY 476

**Course Typically Offered:** Fall

Credits: 3

### **PHY 455 - Electricity and Magnetism II**

A continuation of PHY 454. Treats electrodynamics by developing Maxwell's equations and applying them to systems of general interest. Rec 3.

**Prerequisites:** PHY 454.

**Course Typically Offered:** Spring

Credits: 3

### **PHY 462 - Physical Thermodynamics**

A theoretical study of the structure and concepts of equilibrium thermodynamics including the thermodynamic descriptions of the properties and phases of matter, analysis of processes and practical applications. Normally taken as a junior or senior elective by students in the sciences or engineering. Four credit version contains additional term project to be arranged with instructor. Rec 3.

**Prerequisites:** MAT 228 and PHY 111 or PHY 121.

**Course Typically Offered:** Fall

Credits: 3 - 4

### **PHY 463 - Statistical Mechanics**

Introduces statistical mechanics and thermodynamics with examples chosen from magnetic systems, ideal gases, metals, superfluidity, chemical reactions, phase transformations, mixtures, semiconductors, kinetic theory or related topics. Normally taken as a junior or senior elective by students in the sciences or engineering. Rec 3.

**Prerequisites:** MAT 258 or MAT 259 and PHY 236.

**Course Typically Offered:** Spring

Credits: 3

### **PHY 469 - Quantum and Atomic Physics**

Introductory quantum mechanics applied to simple systems and molecules. Wavepackets, Schrodinger equation, operator methods and angular momentum. Rec 3.

**Prerequisites:** PHY 236, PHY 476.

**Course Typically Offered:** Fall

Credits: 3

### **PHY 470 - Nuclear Physics**

Properties of the nucleus, nuclear reactions, radioactive decay, nuclear models, nuclear reactors and nuclear health physics. May be taken without the laboratory, PHY 471. Rec 2.

**Prerequisites:** MAT 259 and PHY 236.

**Course Typically Offered:** Fall

Credits: 2

### **PHY 471 - Nuclear Physics Laboratory**

Laboratory exercises to accompany PHY 470. Lab 2.

**Corequisites:** PHY 470

**Course Typically Offered:** Fall

Credits: 1

### **PHY 472 - Geometrical and Fourier Optics**

Covers geometrical optics, refraction and reflection at plane and spherical surfaces, optical instruments; Fourier optics, interference of waves and diffraction by a single and a double aperture; Lasers - theory of their operation, mode locking and pulse formation. Rec 3.

**Prerequisites:** PHY 112 or PHY 122.

**Corequisites:** MAT 228

**Course Typically Offered:** Spring

Credits: 3

### **PHY 476 - Mathematical Methods in Physics**

Mathematical methods with applications to physics. Topics include: vector algebra volume and surface integral, Del operator, Gauss' and Stokes' theorems. Matrices and eigenvalue problems. Complex numbers, Laplace's equation and boundary value problems.

**Prerequisites:** MAT 259

**Course Typically Offered:** Fall

Credits: 3

### **PHY 480 - Physics of Materials**

An introductory course in the physics of materials, primarily solid state physics. The structural, mechanical, electrical, magnetic, and optical properties of materials are discussed. This course is appropriate for upper level undergraduates and graduate students in the field of physical sciences and engineering. The topics will build upon and utilize concepts from materials science, quantum physics, mechanics, and electricity and magnetism.

**Prerequisites:** PHY 236 and PHY 476 or permission of instructor.

**Course Typically Offered:** Spring, Even Years

Credits: 3

## **PHY 481 - Project Laboratory in Physics I**

An individual project laboratory tailored to the student's particular interests. In consultation with a faculty sponsor, each student is expected to develop a suitable project, approved by the sponsor and the course coordinator. The project may or may not be related to the sponsor's research. Full written reports are required. Lab 6.

**General Education Requirements:** Together with PHY 400, this course Satisfies the General Education Capstone Experience Requirement.

**Prerequisites:** Open to Physics or Engineering Physics majors with senior standing; others by permission of instructor.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

## **PHY 482 - Project Laboratory in Physics II**

Completion of the project begun in PHY 481. Lab 6.

**General Education Requirements:** Together with PHY 400, this course Satisfies the General Education Capstone Experience Requirement.

**Prerequisites:** PHY 481. Open to Physics and Engineering Physics majors with senior standing; others by permission of instructor.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

## **PHY 495 - Engineering Physics Practice**

Supervised engineering practice in an industrial setting. Placement is off-campus and usually of several month's duration. Prior approval of department chairperson is required.

**Prerequisites:** Sophomore standing with successful completion of 16 hours of physics courses and a declared major in Engineering Physics.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1-6

## **PHY 496 - Field Experience in Physics**

Supervised research or development in an academic laboratory, government laboratory, or industrial environment. Placements are usually off-campus and of several month's duration. Prior approval of the department chairman is required.

**Prerequisites:** Sophomore standing with successful completion of 16 hours of physics courses and a declared major in Engineering Physics.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1-6

### **PHY 497 - Topics in Physics**

Selected topics in areas not already covered by regular course offerings in the department. Primarily for undergraduates.

**Course Typically Offered:** Fall, Spring, Summer

Credits: Ar

### **PHY 499 - Problems in Physics**

A thesis project primarily for undergraduates and ordinarily of an experimental nature.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1-3

### **PMP 12 - Reading and Writing II**

A high intermediate literature-based course for English Language Learners. In this course successful students will learn and apply reading and writing skills essential for academic learning, inquiry, and discourse in the context of authentic academic reading and writing tasks. This course offers a hands-on approach to authentic reading and writing tasks. Contemporary academic and literary texts as well as real-world texts will be used to develop students' critical reading abilities, in addition to improving their vocabulary, writing, listening and speaking skills.

**Prerequisites:** Enrollment is restricted to students in the International Study Center program.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **PMP 13 - Reading and Writing III**

Instruction is designed to help students understand their current abilities to read and to write English and to provide assistance and practices to facilitate development of these skills that will promote success in their studies at the next level. Students will be required to read both short and long selections to practice determining the writer's intended message in addition to comprehending details and facts. Students will be provided opportunities to improve their abilities to express understandings and ideas in academic writings while critiquing the works of others. Students will write research papers to become familiar with aspects of conducting research and following APA guidelines to produce academically acceptable papers.

**Prerequisites:** Enrollment is restricted to students in the International Study Center program.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **PMP 13 - Reading and Writing III**

Instruction is designed to help students understand their current abilities to read and to write English and to provide assistance and practices to facilitate development of these skills that will promote success in their studies at the next level. Students will be required to read both short and long selections to practice determining the writer's intended message in addition to comprehending details and facts. Students will be provided opportunities to improve their abilities to express understandings and ideas in academic writings while critiquing the works of others. Students will write research papers to become familiar with aspects of conducting research and following APA guidelines to produce academically acceptable papers.

**Prerequisites:** Enrollment is restricted to students in the International Study Center program.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **PMP 32 - Listening and Speaking II**

Listening and Speaking II focuses on the comprehension of oral lectures in a variety of liberal arts disciplines. You will learn how to be prepared for lectures, how to listen better during lectures, and how to recognize what you missed in a lecture. There is a strong emphasis on note-taking strategies and class discussion on the lecture. Wherever possible, recordings of authentic university lectures will be used. Speaking focuses on the clear pronunciation of common words and phrases and continues the development of English pronunciation patterns of stress and intonation. Students will practice English speaking skills in different settings utilizing a variety of online and interactive tools through classroom activities, debates and presentations. Pre-requisite: Appropriate English language proficiency.

**Prerequisites:** Enrollment is restricted to students in the International Study Center program.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3



### **PMP 33 - Listening and Speaking III**

This course uses authentic academic tasks to aid students in the comprehension of academic lectures, discussions, and presentations, while also building note taking and organizational skills. Students in this course also focus on assessing and applying appropriate academic presentation and discourse style. When possible, materials from other courses the students are taking will be integrated into classroom activities and assignments. Appropriate English Language proficiency is a prerequisite. Graduate students will be working with graduate-level materials.

**Prerequisites:** Enrollment is restricted to students in the International Study Center program.

Credits: 3

### **PMP 42 - Grammar II**

The instruction in Grammar II is designed to build students' abilities to speak and write English effectively. This course builds on students' prior knowledge to reinforce basic language skills and improve the fluency and accuracy of high intermediate-level students. High-interest, academic content area reading lessons, as well as spoken and written assignments keep students involved as they learn and practice the various parts of speech and sentence construction.

**Prerequisites:** Enrollment is restricted to students in the International Study Center program.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **PMP 60 - GRE/GMAT Prep Course**

This course is designed to help prepare students for success on both the GRE and GMAT exams. We will review math, verbal, and critical thinking skills, and learn strategies for approaching the question types. The course will incorporate lecture, note-taking, class discussion, class exercises, homework, quizzes, and a full-length practice test.

**Corequisites:** Enrollment is restricted to students in the International Study Center program.

Credits: 3

### **PMP 61 - U S Culture I**

This course will offer English Language Learners a means for analyzing and evaluating the complex social and moral issues that young adults throughout the world have to deal with today and relate these issues specifically to the social and moral landscape of the United States. As students examine their own cultures and compare them with others, culture shock and cultural conflict may be lessened; end enjoyment of cultural difference may be strengthened. Students will engage in interactive tasks, including roles play scenarios, expand upon case study, and a vocabulary task reinforcing both vocabulary acquisition and major concepts

from the case. Through the process of reading, writing, discussion, and direct involvement with American students, students in this course will enrich their understanding of today's global society and sharpen their academic English skills. Prerequisite: Appropriate English language proficiency.

**Prerequisites:** Enrollment is restricted to students in the International Study Center program.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

## **PMP 62 - US Culture II**

This course will offer English Language Learners a means for analyzing and evaluating the complex social and moral issues that are specific to the social and moral landscape of the United States. As students examine their own cultures and compare them with others, culture shock and cultural conflict may be lessened and appreciation for cultural differences may be strengthened. Students will engage in interactive tasks, including researching and case analysis of topics and social issues. Through the process of reading, discussion, analysis, writing and direct involvement with US students, students in this class will enrich their understanding of today's global society while at the same time they are sharpening their academic English skills. This course builds on issues and themes developed in U.S. Culture I. Appropriate English Language proficiency is required.

**Prerequisites:** Enrollment is restricted to students in the International Study Center program.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

## **PMP 71 - Critical Thinking I**

Instruction in this Critical Thinking I course is designed to help students understand the processes and to develop the necessary skills to interpret, analyze and evaluate ideas and arguments. These skills will be developed by teaching them explicitly and directly rather than indirectly. Students will be exposed to analyzing reasoning and to developing their own arguments. A requirement will be imposed on all students to keep a critical thinking notebook to help them track their progress by answering questions as they are set. Because critical thinking involved attempting to change the ways in which people think, students will be given comprehensive practice and feedback.

**Prerequisites:** Enrollment is restricted to students in the International Study Center program.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

## **PMP 080 - UMaine Experience I**

This course will enable International Study Center students to fully function at the University of Maine, from the academic, bureaucratic, and social point of view by giving them all the necessary skills to be integrated into student life at UMaine. Through lectures, workshops, and guest speakers, students will get acquainted with all the relevant offices, rules, and accepted behaviors that are essential to their success at UMaine. Lectures will give students information about different areas such as MaineStreet use, student activities, and student support offices. Workshops will allow students to practice communication skills, organize their time, and manage stress among others. Guest speakers will give students the opportunity to meet faculty and staff from different departments and programs such as the School of Engineering, the Business School, the Health Center, the Counseling Center, the Police, and the Alcohol and Drug Prevention Program. This course is cross-listed as IFY 080.

**Prerequisites:** Enrollment is restricted to students in the International Study Center program.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1

### **PMP 90 - GRE/GMAT Prep Course**

This course is designed to help prepare students for success on both the GRE and GMAT exams. We will review math, verbal, and critical thinking skills, and learn strategies for approaching the question types. The course will incorporate lecture, note-taking, class discussion, class exercises, homework, quizzes, and a full-length practice test.

**Prerequisites:** Enrollment is restricted to students in the International Study Center program.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **POS 100 - American Government**

Introduces the major principles, structures, processes and policies of United States government. Covers the Constitution and its development, civil liberties, federalism, the role of political parties and interest groups, and the nature of the presidency, the bureaucracy, the Congress and the national courts.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions Requirement.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **POS 120 - Introduction to World Politics**

A study of contemporary international politics focusing on the interaction of nation-states and including a review of the patterns of global politics from World War II to the present.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Cultural Diversity and International Perspectives Requirements.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **POS 201 - Introduction to Political Theory**

An introduction to the fundamental questions of political philosophy--what is justice? how ought we to live our lives? what is the best regime?--through detailed study of a few central books in the history of political thought, such as Plato's Republic and Machiavelli's Prince.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Ethics Requirements.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

## **POS 203 - American State and Local Government**

Examines the structure and activities of sub-national governments, with particular attention to state modernization, intergovernmental relations, and comparisons between Maine and other states.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions Requirement.

**Course Typically Offered:** Spring

Credits: 3

## **POS 241 - Introduction to Comparative Politics**

Provides an introduction to the major themes of comparative politics, including: comparative political legacies, processes of modernization, comparative governmental institutions, modern political parties and interest groups, comparative policymaking processes, and problems of establishing and maintaining democratic government.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and Cultural Diversity and International Perspectives Requirements.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

## **POS 243 - Canadian Government and Politics**

Provides a historical background to the development of the Canadian political system. Introduces the institutions and processes of Canadian government, federalism, political parties, and interest groups. Considers major public policy issues in contemporary Canada.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and Cultural Diversity and International Perspectives Requirements.

**Course Typically Offered:** Fall

Credits: 3

## **POS 273 - International Relations**

Issues and structures that shape contemporary international relations. Topics include philosophical schools of thought in international relations, instruments of national power, the role of international organizations and international political economy.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Cultural Diversity and International Perspectives Requirements.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **POS 282 - Introduction to American Law**

Examines the nature and function of law in America, emphasizing its evolution and incorporation as a dynamic social instrument.

**Prerequisites:** Sophomore standing.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **POS 301 - Classical Political Thought**

A survey of ancient political philosophy through detailed study of selected writings of Plato, Xenophon, Aristotle, Thucydides and others.

**General Education Requirements:** Satisfies the General Education Ethics, Western Cultural Tradition and Writing Intensive Requirements.

**Prerequisites:** POS 201 or permission or junior or senior standing.

**Course Typically Offered:** Variable

Credits: 3

### **POS 302 - Medieval Political Thought**

A survey of medieval political thought during the European middle ages (5th to 15th centuries) through detailed study of selected writings of Augustine, John of Salisbury, Aquinas, Marsilius, Dante and others.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition, Social Contexts and Institutions and Writing Intensive Requirements.

**Prerequisites:** junior or senior standing or permission.

**Course Typically Offered:** Fall

Credits: 3

### **POS 303 - Early Modern Political Thought**

A survey of early modern political philosophy from the Renaissance to the Enlightenment through detailed study of selected writings of Machiavelli, Descartes, F. Bacon, Hobbes, Locke and others.

**General Education Requirements:** Satisfies the General Education Ethics, Western Cultural Tradition and Writing Intensive Requirements.

**Prerequisites:** POS 201 or junior or senior standing.

**Course Typically Offered:** Variable

Credits: 3

### **POS 304 - American Political Thought**

The development of political ideas in America from the founding period to the present as expounded in the writings of American statesmen and political theorists, and foreign commentators such as Tocqueville.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Writing Intensive Requirement.

**Prerequisites:** Junior or senior standing or permission.

**Course Typically Offered:** Spring, Odd Years

Credits: 3

### **POS 305 - Late Modern Political Thought**

A survey of modern political philosophy from the French Revolution to the twentieth century through detailed study of selected writings of Rousseau, Hegel, Marx, Mill, Nietzsche, and contemporary authors.

**General Education Requirements:** Satisfies the General Education Ethics, Western Cultural Tradition and Writing Intensive Requirements.

**Prerequisites:** POS 201 or junior standing.

**Course Typically Offered:** Variable

Credits: 3

### **POS 306 - Crafting the American Constitution**

This course will engage students in a substantive, detailed, and critical examination of the debates surrounding the drafting, ratification, and early implementation of the Constitution of the United States. It will begin with an examination of the important thinkers who influenced the American Founders, move to a detailed analysis of the critical issues at the Constitutional Convention and in the state ratification debates, and conclude with a look at some early government actions and Supreme Court decisions that put flesh on the bones of the Constitution. During the entirety of this course, students will be asked to reflect on the degree to which the founding debates are still relevant to contemporary American politics and government.

**Prerequisites:** POS 100.

**Course Typically Offered:** Fall

Credits: 3

### **POS 307 - Democratic Theory**

Surveys the major theoretical perspectives of democracy, emphasizing core positions such as liberalism and civic republicanism. Examines competing articulations of more participatory and engaged democratic political systems. Also considers critical perspectives which analyze democracy's exclusions with regard to race, class, gender, and power.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition Requirement and the Ethics Requirements.

**Prerequisites:** POS 201

**Course Typically Offered:** Spring

Credits: 3

### **POS 309 - Topics in Political Theory**

Offers a detailed examination of a selected topic in political theory. May be repeated for credit.

**Prerequisites:** POS 201.

**Course Typically Offered:** Variable

Credits: 3

### **POS 335 - Major Governments of Western Europe**

The political traditions, parties, governmental structures, and special political problems of Great Britain, France and Germany.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions Requirement.

**Prerequisites:** POS 100. Junior or senior standing.

**Course Typically Offered:** Spring

Credits: 3

### **POS 336 - Government and Politics in Russia**

Examines the historical Russian political legacy, the experience of Soviet rule from 1917 until 1991, and explores in-depth current domestic and foreign politics in the Russian Federation. Focuses primarily on the development of the post-Soviet Russian political system.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** POS 100. Junior standing.

**Course Typically Offered:** Fall

Credits: 3



## **POS 337 - Government and Politics in Eurasia**

Examines contemporary government and politics in Eurasia, the general region from Central Asia to the Balkan peninsula of Europe. Major themes will include the formation of independent nation-states in Central Asia, the Caucasus mountain region and Ukraine following the dissolution of the USSR in 1991; and government and politics in Turkey. Also considers patterns of international relations within Eurasia and relations between these countries and the larger world.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** Junior or senior standing or permission of instructor.

**Course Typically Offered:** Spring

Credits: 3

## **POS 344 - Public Policy in Canada**

An analysis of policy making structures with emphasis on the Prime Minister, the Prime Minister's Office, the Cabinet, the Privy Council Office, and other central agents. Relations between the federal and provincial executives are also discussed. Policy making in specific issues of current interest considered.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** Six hours of political science.

**Course Typically Offered:** Spring

Credits: 3

## **POS 348 - The Politics of Sport in America**

The primary purpose of POS 348 is to engage students in a substantive, detailed, and critical examination of the intersection of sport and American society through the lens of political science. Sports and American politics and government are closely connected in myriad ways.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions Requirement.

**Prerequisites:** POS 100.

**Course Typically Offered:** Summers.

Credits: 3

### **POS 349 - Topics in Comparative Politics**

Offers a detailed examination of a selected topic in comparative politics. May be repeated for credit.

**Prerequisites:** POS 241.

**Course Typically Offered:** Variable

Credits: 3

### **POS 352 - American Public Opinion**

Covers the role of public opinion in shaping the American political system. It focuses on defining and measuring citizen opinion, the way citizens develop their political views and the linkages between public opinion and public policy.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions Requirement.

**Prerequisites:** POS 100 or junior or senior standing.

**Course Typically Offered:** Fall, Even Years

Credits: 3

### **POS 353 - The U.S. Congress**

Examines the legislative process and its components, with special attention to congressional elections, the committee structure, the impact of institutional reform and the influence of bicameralism.

**General Education Requirements:** Satisfies the General Education Ethics and Social Contexts and Institutions Requirements.

**Prerequisites:** POS 100. Junior or senior standing.

**Course Typically Offered:** Fall, Even Years

Credits: 3

### **POS 354 - The U.S. Presidency**

Examines presidential leadership in contemporary American politics. Devotes special attention to institutional, constitutional, and historical influences on the presidency. Other topics include: presidential decision-making, psychological aspects of the

presidency, and the sources of cooperation and conflict between the legislative, executive, and judicial branches of government. Analysis of the president's role in foreign and domestic policy.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions Requirement.

**Prerequisites:** POS 100 or junior or senior standing.

**Course Typically Offered:** Variable

Credits: 3

### **POS 355 - Music and Politics in the American Context**

Examines the intersections and interactions of music and politics in the United States. Topics of investigation and discussion include (but are not limited to): the role of music in society, why the state might be interested in music, how music contributes to identity, and the political messages and activism produced by music.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Prerequisites:** POS 100 or permission of instructor.

**Course Typically Offered:** Spring

Credits: 3

### **POS 357 - Film and Politics**

Examines the relationship between film and politics. Explores the portrayal of American and international politics in film through a series of common, politically-relevant themes. Also considers how film has been used as an outlet for political messages, as well as an entertainment medium, and examines how political films inform society's understanding of politics.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Prerequisites:** None.

**Course Typically Offered:** Variable

Credits: 3

### **POS 359 - Topics in American Government**

Offers a detailed examination of a selected topic in American politics. May be repeated for credit.

**Prerequisites:** POS 100.

**Course Typically Offered:** Variable

Credits: 3

### **POS 362 - Maine Government**

Analyzes changes in the institutions and policies of the state of Maine in recent times. Covers the role of Maine in the federal system, the impact of institutional and organizational reform, and state policymaking.

**Prerequisites:** POS 100 or Junior or Senior Standing

**Course Typically Offered:** Variable

Credits: 3

### **POS 363 - Urban Government and Politics**

Examines the politics and government of urban areas in the United States, in both historical and contemporary contexts. Topics of investigation and discussion include (but are not limited to): the functions and roles of American cities, the responsibilities of urban governments, the issue of power in the metropolis, the American federal system and urban governance, race, ethnicity, and class in urban America, and the challenges facing contemporary urban society.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions Requirement.

**Prerequisites:** POS 100 or permission of instructor.

**Course Typically Offered:** Spring, Summer

Credits: 3

### **POS 368 - China**

Examines contemporary China; its recent history, political system, economic and social development, and China's relations with its Asian neighbors and the United States.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** One HTY or POS course at the 200 level or above.

**Course Typically Offered:** Variable

Credits: 3

## **POS 369 - Topics in International Relations**

Offers a detailed examination of a selected topic in International Relations. May be repeated for credit.

**Prerequisites:** POS 273.

**Course Typically Offered:** Variable

## **POS 370 - International Terrorism: The Challenges for America**

Analyzes the impact of international terrorism on U.S. national security and the ethical dilemmas arising from counter-terrorism. Topics include the evolution of terrorism, especially in Afghanistan and the Middle East; the proliferation of weapons of mass destruction; and the formulation of U.S. national security strategy.

**General Education Requirements:** Satisfies the General Education Ethics and Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** POS 100 or POS 120 or permission.

**Course Typically Offered:** Fall

Credits: 3

## **POS 372 - Canadian Foreign Policy**

Canadian theory and practice of foreign policy, with emphasis on the major international problems which Canada faces today. Special attention is directed to Canada's relations with the United States and other Western Hemisphere countries.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** POS 100 or POS 120 or permission of instructor.

**Course Typically Offered:** Fall

Credits: 3

## **POS 374 - American Foreign Policy**

American foreign policy and the major international problems facing the United States today. Special focus will be on United

States relations with Europe, Russia, Japan and the Third World.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** POS 100 or POS 120.

**Course Typically Offered:** Variable

Credits: 3

### **POS 375 - United States and the Middle East**

Survey of factors and forces that influence American foreign policy in the Middle East, with special emphasis on the Palestinian-Israeli conflict, relations with Iran and U.S. military presence in the Persian Gulf. Policies of various American presidents from Truman to present will be discussed and analyzed.

**Course Typically Offered:** Variable

Credits: 3

### **POS 380 - Interest Groups and American Politics**

Every day millions of Americans act politically to defend their interests, yet Americans as a whole overwhelmingly have a negative opinion of interest groups and their involvement in the political process. How can this be? This course will examine the purposes, roles, and ultimately the results produced by interest groups in the American political process. Students will finish with a much more complete understanding of the place that interest groups occupy in the American political universe.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions Requirement.

**Prerequisites:** POS 100 or permission of instructor.

**Course Typically Offered:** Fall, Odd Years

Credits: 3

### **POS 381 - Political Parties and Elections**

Analyzes the development of, and current theories regarding, political parties and elections in American politics. Topics include theories of party realignment, voting behavior, party composition and behavior, and the relationship between parties, elections and democracy. Covers both presidential and congressional elections.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions Requirement.

**Prerequisites:** POS 100 or junior or senior standing.

**Course Typically Offered:** Summer & Fall, Even Years

Credits: 3

### **POS 383 - American Constitutional Law**

Examines the evolving nature of the U.S. Constitution through consideration of major Supreme Court decisions in areas such as federalism, legislative power, executive authority and judicial autonomy.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions Requirement.

**Prerequisites:** POS 100 or junior or senior standing.

**Course Typically Offered:** Fall

Credits: 3

### **POS 384 - American Civil Liberties**

Examines the tension between individual rights and the social order through consideration of major Supreme Court decisions involving the Bill of Rights and the Fourteenth Amendment.

**General Education Requirements:** Satisfies the General Education Ethics and Social Contexts and Institutions Requirements.

**Prerequisites:** POS 100 or junior or senior standing.

**Course Typically Offered:** Variable

Credits: 3

### **POS 385 - Women and Politics**

Examines women as citizens and leaders and also examines movements to increase women's public role in U.S. politics. Considers racial, ethnic, partisan and class dimensions of those movements and political activities and the influence of government policies on gender relations.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and Writing Intensive Requirement.

**Prerequisites:** POS 100 or junior or senior standing.

**Course Typically Offered:** Fall, Odd Years

Credits: 3

### **POS 386 - Religion and Politics in the United States**

Religion has historically played a substantial role in the government and politics of the United States, and continues to do so in contemporary American society. Focuses on the intersections and interactions between religion and politics in the United States. Areas of examination include, (but are not limited to): religion and American culture, religion and the Constitution, religion and public policy, religion and individual political behavior, and religion and violence in the United States.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions Requirement.

**Prerequisites:** POS 100 or permission of instructor.

**Course Typically Offered:** Spring, Even Years

Credits: 3

### **POS 401 - Seminar in Political Theory**

Detailed examination of the text(s) of a classic thinker in the history of political theory. May be repeated for credit.

**General Education Requirements:** Satisfies the General Education Ethics, Western Cultural Tradition and Writing Intensive Requirements.

**Prerequisites:** One course in political theory or permission of instructor.

**Course Typically Offered:** Variable

Credits: 3

### **POS 453 - Political Behavior and Participation**

Looks at which citizens get involved in politics and why they do so. Examines theories involving individual choice and resources, community organizations, interest group activities and social movements. Additional topics include participation and democratic theory, historical reasons why participation has changed and proposals to increase citizen involvement in politics.

**Prerequisites:** Junior or Senior standing.

**Course Typically Offered:** Variable

Credits: 3



## **POS 467 - African Politics**

Analysis of the transition from colonialism to independence in selected countries of Sub-Saharan Africa. Discussion of nation-building, the one-party system, military intervention in politics, and neo-colonialism.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions, Cultural Diversity and International Perspectives and Writing Intensive Requirements.

**Prerequisites:** 6 hours of Political Science.

**Course Typically Offered:** Variable

Credits: 3

## **POS 469 - Politics of the Middle East**

The politics of the Middle East from World War I to the present. Special attention to problems of Palestine and the creation of Israel, the interplay between the politics of the great powers and Middle East conflicts, and problems of nationalism, modernization, and revolution.

**Prerequisites:** POS 100 or POS 120 and junior or senior standing.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

## **POS 470 - International Law**

Examines international legal principles relating to state territory and jurisdiction, the oceans, human rights and war.

**Prerequisites:** Junior Standing, POS 120 and POS 273 or POS 374 or POS 241

**Course Typically Offered:** Variable

Credits: 3

## **POS 474 - Conduct of Foreign Policy**

Examines the formulation and implementation of American foreign policy. Special focus will be placed on American Political culture; Presidential and congressional powers in foreign policy; government bureaucracies, such as the Departments of State, Defense and Treasury; and conceptual and theoretical approaches to policy making.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions Requirements.

**Prerequisites:** POS 100 or POS 120 and junior or senior standing.

**Course Typically Offered:** Variable

Credits: 3

### **POS 475 - International Security**

Examines national and international factors affecting the survival and security of states. Topics include components and use of military power, arms control and proliferation, the cause and resolution of conflict, negotiation and decision-making processes and structures.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** POS 100 or POS 120 and junior or senior standing.

**Course Typically Offered:** Variable

Credits: 3

### **POS 476 - Seminar in World Politics**

A topical survey of conceptual and theoretical developments in the field of world politics. Examination of these developments in the context of contemporary issues and controversies will be emphasized. May be repeated for credit.

**Prerequisites:** POS 100 or POS 120 and junior or senior standing.

**Course Typically Offered:** Variable

Credits: 3

### **POS 484 - The American Constitution and Criminal Due Process**

Examines the development of supreme Court doctrines governing the jurisprudence of constitutional rights afforded the criminally accused. Areas examined include the 4th, 5th, 6th, and 8th amendments to the Constitution and their applicability to the states via the 14th amendment.

**General Education Requirements:** Satisfies the General Education Ethics and Social Contexts and Institutions Requirements.

**Prerequisites:** POS 100 or junior standing.

**Course Typically Offered:** Variable

Credits: 3

### **POS 486 - Religious Thought, the American Identity, and U.S. Public Policy**

This course examines the place of religion in early American society, and how religion affected the debates surrounding and eventual shaping of the American governing system. The role of religion in individual and collective identities is also explored. Particular attention is devoted to the ways in which religion affects American public policy.

**General Education Requirements:** Satisfies the General Education Social Context and Institutions Requirement and Writing Intensive Requirement.

**Prerequisites:** POS 100 and Junior or Senior Standing.

**Course Typically Offered:** Variable

Credits: 3

### **POS 487 - SL: Practicum in Engaged Policy Studies I**

Focuses upon the critical application of analytical research skills to a community policy issue. Examines different conceptions of community engagement and the university's role in serving the community. Culminates with design of an engaged research project, with a community-based organization or policy outlet serving as a research partner. The results of this research will be shared publicly with the general public and will shape and inform future policy thinking and action on this issue or challenge. Designed to be taken as the initial course in a two-course sequence prior to POS 488, Practicum in Engaged Policy Studies II, which will be offered the following semester. This course is a UMaine service-learning designated course.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement. Successful completion of both POS 487 and POS 488 satisfies the General Education Capstone Experience.

**Prerequisites:** Junior or Senior Standing

**Course Typically Offered:** Fall

Credits: 3

### **POS 488 - Practicum in Engaged Policy Studies II**

Focuses upon the critical application of analytical research skills to a community policy issue. Examines different conceptions of community engagement and the university's role in serving the community. Involved conducting research and analysis in collaboration with a community partner, and crafting an original policy report on a community issue. Designed to be taken sequentially after POS 487, "Practicum in Engaged Policy Studies I".

**General Education Requirements:** Satisfied the General Education Writing Intensive Requirement. Successful completion of both POS 487 and POS 488 satisfies the "Capstone Experience" Requirement.

**Prerequisites:** A grade of B or better in POS 487.

**Course Typically Offered:** Spring

Credits: 3

### **POS 493 - American Politics Internship**

Provides students with the opportunity to gain experience in a department or agency at the national, state, or local level, or to conduct a major research project. Reports and a research paper are normally required for an agency internship.

**Prerequisites:** permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3, 6 or 9

### **POS 495 - Congressional Internship**

Assignment to the Washington, D.C. office of a member of Congress, normally from the Maine delegation, during the spring semester. Readings and reports are required in addition to performing staff work in a congressional office. The internship is open to juniors and seniors on a competitive basis; applications and interviews are conducted each fall to fill the spring internship positions.

**Prerequisites:** permission.

**Course Typically Offered:** Spring

Credits: 6 or 9

### **POS 496 - International Affairs Internship**

Provides students the opportunity to gain experience in a department or agency, either in the United States or abroad, that deals with international affairs. Students may not receive more than 9 credit hours for this internship.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 6 or 9

## **POS 498 - Independent Study in Political Science**

Provides students the opportunity to work closely with an individual member of the faculty, either as a research assistant or as the author of a major independent study paper. May be repeated for credit.

**Prerequisites:** permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

## **POS 499 - Senior Seminar in Political Science**

Examines selected theoretical and empirical topics in Political Science. Assumes a knowledge of, and builds upon, a body of knowledge developed by students in the major and represents the culmination of majors' concentration of study within the major. Students can write an Honors thesis instead of taking the capstone course.

**General Education Requirements:** Satisfies the General Education Writing Intensive and Capstone Experience Requirements.

**Prerequisites:** Senior standing and Political Science major or International Affairs major with a concentration in Political Science.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **PPA 264 - Introduction to the Pulp and Paper Industry**

Considers the manufacture of paper from fibrous raw materials to the processing of finished products. Emphasis on papers produced from wood, non-wood, and secondary fibers. Recommended for CHE/BLE students taking the cooperative work experience within the Pulp and Paper industry. Lec 3. (Spring.)

**Prerequisites:** Sophomore standing or greater.

**Course Typically Offered:** Spring

Credits: 3

## **PPA 465 - Pulp Technology**

The chemical and engineering principles of manufacturing various wood pulps. Rec 3. (Fall.)

**Prerequisites:** Junior standing and CHB 200 or permission.

**Course Typically Offered:** Fall

Credits: 3

### **PPA 466 - Paper Technology**

The chemical and engineering principles of paper manufacturing from the preparation of fiber furnishes to the final stage of drying. Rec 3. (Spring.)

**Prerequisites:** CHB 200 or permission.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **PPA 473 - Pulp Manufacture and Testing**

Problem-oriented laboratory course involving the process design criteria for the production of mechanical, semi-chemical and chemical wood pulps. Lab 8. (Fall.)

**Prerequisites:** PPA 465 or concurrently.

**Course Typically Offered:** Fall

Credits: 4

### **PPA 499 - Undergraduate Thesis**

Original investigation of a pulp and paper problem and reporting of the results. (Offered by arrangement.)

**Prerequisites:** permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: Ar

### **PSE 100 - Plant Science**

Basics of plant anatomy, morphology, ecology, physiology and taxonomy with examples drawn from common agricultural and horticultural plants are discussed. Labs include hands-on investigations of local plants. Lec 3, Lab 2. Course will include field trips during class hours.

**General Education Requirements:** Satisfies the General Education Lab in the Basic or Applied Sciences Requirement.

**Course Typically Offered:** Fall

Credits: 4

## **PSE 101 - Cropping Systems**

Principles and practices of various cropping systems involving agricultural crops. Basics of tillage, seeding, crop genetic resources, harvesting and storage of vegetables and grains are discussed. Lec 4.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** PSE 100 or permission.

**Course Typically Offered:** Spring, Even Years

Credits: 4

## **PSE 105 - Principles of Sustainable Agriculture**

Basic design principles and examples of environmentally and economically sustainable agricultural systems. Describes the use of synthetic fertilizers and pesticides, but emphasis will be placed on identifying management practices that a) biologically improve soil structure, organic matter content, and fertility; and b) minimize or eliminate the need for chemical interventions for control of insect pests, pathogens, and weeds. Rec 3.

**General Education Requirements:** Satisfies the General Education Application of Scientific Knowledge and Population and the Environment Requirements.

**Course Typically Offered:** Fall

Credits: 3

## **PSE 110 - Introduction to Horticulture and Green Design**

Students will understand the science of growing plants. They will learn to apply botany and soil science to produce horticulture crops. Students will participate in hands-on projects to apply basic science principles including flower arranging, container plant production, and community gardening and they will learn to evaluate scientific articles. Students will also apply the science of horticulture to topics in the green design field such as permaculture, green roof design, and sustainable landscape design and

construction. Course will include field trips during class hours.

**General Education Requirements:** Satisfies the General Education Applications of Scientific Knowledge Requirement.

**Course Typically Offered:** Spring

Credits: 3

### **PSE 121 - Human Societies, Soil and Water: The Unbreakable Link**

Considers the soil and water resources upon which human societies depend. Begins with a survey of basic properties and processes important in understanding soil and water resources. Ethical approaches to resource decision-making are introduced and used. Through the use of many case studies and examples, students are encouraged to clarify and develop their own personal values with respect to human use of the environment. Lec 3.

**General Education Requirements:** Satisfies the General Education Population and the Environment and Ethics Requirements.

**Course Typically Offered:** Spring, Odd Years

Credits: 3

### **PSE 203 - Weed Biology and Identification**

This course offers students an introduction to the characteristics and strategies of weedy and invasive plants, followed by study of weed communities in turf and urban landscapes, roadsides and waste areas, and agricultural fields. Students will learn to identify, in the field, approximately seventy-five weedy plant species and will know the principle weedy traits and/or strategies for each species. Course will include field trips during class hours.

**Course Typically Offered:** Fall, Even Years

Credits: 3

### **PSE 215 - Vegetable and Fruit Production**

The course will provide students with a practical introduction to growing vegetable and fruit crops of local importance with an emphasis on organic and sustainable production systems. Lectures will focus on particular species, or group of related species, and will include information on cultivar selection, field preparation, fertility and pest management, cultural practices, and harvesting. This course may include off campus field trips during class hours.

**Prerequisites:** BIO 200 or PSE 100 or SFR 100.

Credits: 3



## **PSE 219 - SL: Herbaceous Landscape Plants**

The study of fundamental principles and practices of identifying, growing and using perennial and annual herbaceous ornamental plants in the landscape. Students will work with Cooperative Extension and Penobscot County Master Gardeners to manage herbaceous plant gardens that serve the community for education and demonstration. Students will participate in extensive outdoor labs and may participate in field trips. This course has been designated as an UMaine service-learning course. Course will include field trips during class hours.

**Prerequisites:** Grade of C- or better in PSE 100 or BIO 200 or SFR 100.

**Course Typically Offered:** Fall

Credits: 3

## **PSE 221 - Woody Landscape Plants**

The study of deciduous and evergreen trees, shrubs, vines, and groundcovers for use in the New England landscape; including identification skills, culture, and function in the landscape. Extensive outdoor labs. Lec 3, Lab 2.

**Prerequisites:** Grade of C- or better in PSE 100 or BIO 200 or FES 100.

**Course Typically Offered:** Fall

Credits: 4

## **PSE 227 - Landscape Design and Construction Techniques**

An introduction to landscape design and the physical properties, functional uses and aesthetic values of landscape construction materials, as independent items and as designed elements within the landscape. Current construction practices and installation methods will be investigated. Graphic skills will focus on quick techniques for drawing grading plans, layout plans, and construction details. Lec 2, Studio 4. Course will include weekend field trips.

**Prerequisites:** A grade of C- or better in PSE 100 and Environmental Horticulture majors.

**Course Typically Offered:** Fall

Credits: 4

## **PSE 305 - Problems in Plant, Soil and Environmental Sciences**

Opportunity is provided for specialization in specific areas of plant, soil and environmental sciences.

**Prerequisites:** Permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: Ar

## **PSE 312 - Sustainable Food Systems: Challenges and Opportunities**

Students will read about, and discuss various aspects of our food system: what makes up a food system, how agriculture influences a food system, agricultural history, agricultural efficiencies, threats to a sustainable food system, genetic engineering, and human values and food.

**Prerequisites:** PSE 105 or permission

**Course Typically Offered:** Fall, Even Years

Credits: 3

## **PSE 320 - Soil Organic Matter Management**

Fundamental aspects of soil organic matter management. Principles of plant residue decomposition, tillage, use of organic soil amendments and environmental and agricultural implications of human soil management. Lec 3.

**Prerequisites:** BMB 207 or CHY 121 and PSE 140.

**Course Typically Offered:** Fall, Even Years

Credits: 3

## **PSE 324 - Digital Graphic Communication**

An introductory information and computer technology course that is designed to enable the student to understand how to use programs that pertain to the landscape design and horticulture field. Through lectures, reading assignments, in-class exercises, and out-of-class exercises, students will achieve the course objectives. This course will cover beginning, intermediate, and some advanced concepts and techniques for AutoCAD 2010, as well as beginning and some intermediate techniques for Adobe Photoshop. Lec 2, Lab 2.

**Course Typically Offered:** Fall

Credits: 3

## **PSE 325 - Turfgrass Management**

Study of the scientific principles of turfgrass culture. Includes identification, soil requirements, establishment, fertilization, mowing and pest control of grass species used on home lawns, golf courses, athletic fields, parks and low maintenance areas. Rec 2, Lab 2.

**Prerequisites:** Junior Standing and a grade of C- or better is required in PSE 100 or BIO 200 or FES 100. PSE 140 is recommended.

**Course Typically Offered:** Fall, Odd Years

Credits: 3

## **PSE 328 - Landscape Design**

The planning and design of residential sites. Based on balancing the "hands-on" experience with formal design education, by furnishing an overview of the fundamentals of the residential site design process. The students will integrate concepts in plant material, landscape construction, graphic communication, and general horticultural experiences. Course will include field trips on weekends.

**Prerequisites:** A grade of C- or better in PSE 100 or BIO 200 or SFR 100 or by permission

**Course Typically Offered:** Spring

Credits: 4

## **PSE 396 - Field Experience in Plant, Soil and Environmental Sciences**

An approved program of work experience which contributes to the academic major and for which academic credit is given. Students may work part time or full time for a semester in a job related to their professional career goals, including on-farm internships.

(Pass/Fail Grade Only.)

**Prerequisites:** Junior standing and approved proposal.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1 - 16

## **PSE 403 - Weed Ecology and Management**

Ecological principles and their application in non-chemical and reduced input weed management strategies. Lec 2, Lab 2. Course

will include field trips during class hours.

**Prerequisites:** PSE 100 (or BIO 200 or FES 100) and BIO 319 (or FES 407 or WLE 200).

**Course Typically Offered:** Fall, Odd Years

Credits: 3

## **PSE 410 - Plant Propagation**

Principles and methods involved in the propagation of herbaceous and woody plants by seeds, division, layering, cutting, budding, grafting, and tissue culture. Lec 3, Lab 3.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** A grade of C- or better in PSE 100 or BIO 200 or FES 100, and Junior standing. PSE 140 is recommended.

**Course Typically Offered:** Spring

Credits: 4

## **PSE 415 - Greenhouse Management**

The study of greenhouse management practices and principles. Specific areas of study will include greenhouse structure, operation, and the use of greenhouses for ornamental plant production. Extensive greenhouse work. Lec 3, Lab 2. Course will include field trips during class hours.

**Prerequisites:** A grade of C- or better in PSE 100 or BIO 200 or FES 100, and Junior standing. PSE 140 is recommended.

**Course Typically Offered:** Spring

Credits: 4

## **PSE 424 - Nursery Management**

Covers the basic techniques for production of woody and herbaceous plants in nursery and other outdoor settings. Specific areas of study will include nursery site selection and construction, retail and wholesale nursery planning, equipments for nursery operation, nursery crop selection, regeneration, culture, and production, personnel management, marketing, and garden center operation. Extensive field lab work at campus nursery and garden. Lec 2, Lab 2. Course will include field trips on weekends.

**Prerequisites:** Junior standing and a grade of C- or better in PSE 100.

**Course Typically Offered:** Fall

Credits: 3

### **PSE 425 - Landscape Management**

Designed to provide the senior landscape horticulture student with the opportunity to bring together all aspects of theoretical and applied training. Students develop an understanding of professional practice in landscape management, site management, personnel management to project management. Accomplished through interacting with a variety of professionals, field trips and real life hands-on projects. Lec 2, Lab 2 Course will include field trips on weekends.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** Grade of C- or better in PSE100; Senior Standing and Environmental Horticulture or Sustainable Agriculture majors or minors only.

**Course Typically Offered:** Spring

Credits: 3

### **PSE 430 - Environmental Horticulture**

Integrates previously covered topics with new information using class discussion, lectures, student papers, presentations and hands-on projects. Some of the topics covered include: soil management for sustaining organic matter and preventing erosion, reducing water use in the managed landscape, incorporating native plants into agricultural and horticultural systems, eliminating invasive plants from the home and farm landscape, and creation/protection of wildlife habitat in the managed land/farmscape.

**General Education Requirements:** Satisfies the General Education Capstone Experience Requirement.

**Prerequisites:** Senior Standing in Environmental Horticulture or Sustainable Agriculture.

**Course Typically Offered:** Spring

Credits: 3

### **PSE 440 - Environmental Soil Chemistry and Plant Nutrition**

A study of the origin and nature of soil chemical properties and how they influence plant growth and environmental quality. The cycling of nutrients and carbon through soils, the biosphere, the hydrosphere, and the atmosphere is discussed. The impacts of human practices such as fertilization, mining, fossil fuel consumption, irrigation, and waste disposal on the quality of soils in both managed and natural systems are considered.

**Prerequisites:** BMB 208 or CHY 122 and PSE 140.

**Course Typically Offered:** Spring, Even Years

Credits: 3

### **PSE 442 - Pedology: The Science of Soil Morphology, Genesis and Classification**

Examines the relationships between soil properties (color, structure, organic matter content, drainage, nutrient content, etc.) and soil formation factors (parent material, climate, organisms, relief, time). Addresses major components of pedology including soil classification and the role of soils in global biogeochemical processes.

**Prerequisites:** PSE 140 or permission.

**Course Typically Offered:** Fall, Even Years

Credits: 3

### **PSE 444 - Field Soil Morphology and Classification Techniques**

Soil profile description, classification and land use interpretation techniques taught in the field. The focus of this class is on soils of the state of Maine. One weekend field trip planned. On site lectures will include descriptions of the soil/geomorphology relationships. Course ends mid semester. Lab 6.

**Prerequisites:** PSE 140 or permission.

**Corequisites:** PSE 442

**Course Typically Offered:** Fall, Even Years

Credits: 1

### **PSE 457 - Plant Pathology**

This course provides an understanding of the biology of plant diseases, the agents that cause them, the conditions that affect their severity, and the methods used to manage them. Students should develop the ability to recognize or diagnose particular diseases and an understanding of the principles of disease management. PSE 457 and PSE 557 cannot both be taken for credit. Course will include field trips during class hours.

**Prerequisites:** Junior or Senior Standing and either BIO 100 or PSE 100.

**Course Typically Offered:** Fall

Credits: 4

## **PSE 469 - Soil Microbiology**

This course considers the physiological, biochemical and ecological diversity of soil microorganisms and their interactions with other organisms and the environment. Topics include microbial cycling of organic matter and nutrients in soil, sustainable soil management, microbial interactions with important resources such as energy, and pathogenic organisms.

**Prerequisites:** BIO 100 and BMB 207/209 or CHY 121/123 or permission.

**Course Typically Offered:** Spring, Odd Years

Credits: 3

## **PSE 479 - Crop Ecology and Physiology**

An examination of agricultural systems focusing on the physiological responses of plant communities and the critical role of nitrogen, water relations and photosynthesis within these communities. Extensive reading and a written project are required.

**Prerequisites:** PSE 100 and PSE 105 or permission

**Course Typically Offered:** Variable

Credits: 3

## **PSY 100 - General Psychology**

Lecture on and discussions of basic psychological processes, including learning, perception, motivation and emotion, higher mental processes, individual differences, personality and additional selected topics.

**General Education Requirements:** Satisfies the General Education Social Context and Institutions Requirement.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

## **PSY 208 - Theories of Personality**

Examines the chief contemporary approaches to the study of personality including critical issues in personality. Also considers assessment techniques and research methods.

**Prerequisites:** PSY 100.

**Course Typically Offered:** Variable

Credits: 3

### **PSY 212 - Abnormal Psychology**

Examines the origin, development, and manifestations of abnormal behavior with emphasis on the biological, social, and psychological determinants of deviant behavior.

**Prerequisites:** PSY 100.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **PSY 223 - Psychology of Childhood**

A systematic study of childhood behavior and psychological development. Emphasis on principles underlying development, methods of child study and practical implications.

**Prerequisites:** PSY 100.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **PSY 224 - Psychology of Adolescence**

A study of adolescent development in the physical, intellectual, emotional, and social spheres. Adolescent personality and problems of adjustment considered in relation to the family, the school and the community, and the world of work. Covers delinquency and abnormality in adolescents.

**Prerequisites:** PSY 100.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **PSY 230 - Social Psychology**

An introduction to the study of social behavior from a psychological perspective. Representative topics include culture and



personality, attitude formation and change, conformity, leadership and prejudice.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions Requirement.

**Prerequisites:** PSY 100.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **PSY 232 - Environmental Psychology**

The study of the transactions between people and their physical environments. Representative topics include territoriality, crowding, personal space, privacy, architectural design of space and self-control and development phenomena.

**Prerequisites:** PSY 100.

**Course Typically Offered:** Variable

Credits: 3

### **PSY 241 - Statistics in Psychology**

A survey of techniques used to obtain, display, analyze, and interpret data in psychology. The lecture section will emphasize the theoretical bases of the topics, while the recitation section will allow students to focus upon the computational procedures involved in the various statistical techniques. Lec 3, Rec 2.

**General Education Requirements:** Meets requirements for Quantitative Literacy/Mathematics General Education courses.

**Prerequisites:** PSY 100.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 4

### **PSY 245 - Principles of Psychological Research**

Discussion of various research methods used in the scientific approach to the study of behavior. Laboratory will demonstrate these methods and develop skills in statistically analyzing data using computers. Students will learn to interpret the statistical analyses and write papers discussing the results of the experiments. Lec 2, Lab 2.

**Prerequisites:** PSY 241.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 4

### **PSY 251 - Psychology of Motivation**

A survey of theory, research methodology and experimentally obtained facts related to the activation and direction of behavior.

**Prerequisites:** PSY 100.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **PSY 252 - Learning and Behavior**

Examines theory and research in animal and human learning. Fundamental principles of classical and instrumental operant conditioning and their applications to human learning and behavior are emphasized.

**Prerequisites:** PSY 100.

**Course Typically Offered:** Variable

Credits: 3

### **PSY 320 - Child Study Laboratory I**

Observation and study of preschool children, as well as participation in guiding activities. Students undertake individual projects, supplemented by reading and class discussion. Emphasis on social development in early childhood. PSY 241, PSY 245 and PSY 223 recommended. Rec 2, Lab 3.

**Course Typically Offered:** Fall

Credits: 3

### **PSY 321 - Child Study Laboratory II**

Observation and study of preschool children. Individual projects, supplemented by reading and class discussions. Opportunity to assist in guiding the children's activities. Emphasis on cognitive development. PSY 241, PSY 245 and PSY 223 recommended. Rec 2, Lab 3.

**Course Typically Offered:** Spring

Credits: 3

### **PSY 328 - Tests and Measurements**

Provides a contemporary overview of test and measurements in psychology, covering the history, concepts, theories, methods, empirical standing, technical aspects, and ethics of psychological assessment.

**Prerequisites:** PSY 241, PSY 245.

**Course Typically Offered:** Fall

Credits: 3

### **PSY 350 - Cognition**

An introduction to the psychological study of human information processing and thinking. Representative topics included attention, pattern recognition, short and long-term memory, semantic memory, visual memory, mental imagery, problem solving and creativity.

**Prerequisites:** PSY 245 or BIO 200.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **PSY 361 - Sensation and Perception**

Principles and theories of the ways we make contact with our environment by seeing, hearing, smelling, tasting and feeling. Psychophysics is covered.

**Prerequisites:** PSY 241, PSY 245.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **PSY 365 - Biopsychology and Behavioral Neuroscience**

Explores the biological bases and brain mechanisms of human and animal behavior. Considers the neuroanatomical, neurophysiological, and neuropharmacological foundations of sensation and perception, sleep and arousal, sexual behavior, learning and memory, and psychiatric disorders.

**Prerequisites:** PSY 245 or BIO 200.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **PSY 401 - Health Psychology**

Presents a biopsychosocial approach to the study of lifestyles, behaviors, response styles and personality factors that may impact an individual's health. Research comes from the areas of psychology, neuroscience, public health and medicine. Topics will include the relationship of psychological and social factors on physical conditions and recent research in these areas.

**Prerequisites:** PSY 212, PSY 241, PSY 245.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **PSY 412 - Foundations of Clinical Psychology**

Provides an overview of clinical psychology. Topics include the helping professions, historical development of clinical psychology, approaches to psychological assessment and psychotherapy, controversies in the field, and new directions in the field.

**Prerequisites:** PSY 212, PSY 241, PSY 245; junior or senior standing.

**Course Typically Offered:** Variable

Credits: 3

### **PSY 422 - Infancy: Neurobehavioral Development**

Surveys current concepts and findings in infancy research with an emphasis on understanding brain-development from the perspective of behavioral and functional systems. Areas of focus typically include perinatal behavioral adaptations, development of motor and sensory systems, early parent-infant interactions, cognition, and research on assessment methods for evaluating developmental delay.

**Prerequisites:** PSY 223, PSY 241, PSY 245.

**Course Typically Offered:** Variable

Credits: 3

### **PSY 423 - The Psychology of Parenting**

Provides a broad perspective on human parenting including theories of parenting, practical issues, cross-cultural perspectives and the relationship between child development and parenting. Special topics include public policy, law and opinion, and child abuse and neglect.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives and Writing Intensive Requirements.

**Prerequisites:** PSY 100, PSY 241 and PSY 245.

**Course Typically Offered:** Variable

Credits: 3

### **PSY 424 - Abnormal Child Psychology**

Examines the origin, development, and manifestation of abnormal child behavior with emphasis on the biological, emotional, social, and psychological determinants of deviant behavior.

**Prerequisites:** PSY 223, PSY 241, PSY 245 or permission.

**Course Typically Offered:** Variable

Credits: 3

### **PSY 425 - Social Issues in Developmental Psychology**

An introduction to the research on current social issues in developmental psychology. Topic areas may include sex-role development, maternal employment, day care, mass media effects, the role of fathers, compensatory education, the effects of poverty, teacher expectancy effects.

**Prerequisites:** PSY 223, PSY 241, PSY 245.

**Course Typically Offered:** Variable

Credits: 3

## **PSY 427 - Emotional Development**

Examines normative growth and individual differences in emotional development from birth through adolescence, integrating research on biological, cognitive and cultural aspects. Within each major developmental period, advances in the expression, regulation and understanding of emotions is explored.

**Prerequisites:** PSY 223, PSY 241, PSY 245.

**Course Typically Offered:** Variable

Credits: 3

## **PSY 430 - Current Topics in Social Psychology**

An introduction to one of several current topics in social psychology. Topic areas may include applied social psychology, attitudes and persuasion, prejudice and stereotyping, social cognition, the self, and social influence. May be repeated for credit. (This course is identical to PSY 630.)

**Prerequisites:** PSY 100 and PSY 230 or permission.

**Course Typically Offered:** Variable

Credits: 3

## **PSY 465 - Hormones, Brain and Behavior**

An introduction to behavioral neuroendocrinology: the study of hormonal effects on brain and behavior in both humans and animals. Topics include the role of hormones in gender differences, parental and aggressive behaviors, stress, and cognitive processes.

**Prerequisites:** PSY 365 or BIO 200.

**Course Typically Offered:** Variable

Credits: 3

## **PSY 466 - Cognitive Neuroscience**

Current theory and research on brain mechanisms underlying higher cognitive processes, including perception, attention, memory, and language. Considers converging evidence from experimental studies with animals, cognitive deficits in brain-damaged humans, and recent findings based on functional imaging of the living human brain.

**Prerequisites:** PSY 350 or BIO 200.

**Course Typically Offered:** Variable

Credits: 3

### **PSY 470 - History and Systems of Psychology**

Surveys the development of psychology as an experimental science. Beginning with Greek views of human nature through Christian theology, the Renaissance and British Associationism. Considers Scottish and German Faculty Psychology and the 19th century developments in physiology that led directly to the birth of experimental psychology. Brief consideration of Gestalt Psychology and Behaviorism, vitalism in the life sciences and the mind-body problem in psychology.

**Prerequisites:** PSY 100, PSY 241, PSY 245; junior or senior standing.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **PSY 490 - Seminar in Issues in Contemporary Psychology**

A review of the current theoretical issues and research findings in the general areas of psychology.

**Prerequisites:** PSY 100, PSY 241, PSY 245.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **PSY 491 - Senior Seminar in Psychology**

One or more current topics in psychology, chosen by the instructor, will be discussed. Students will conduct library research, make oral presentations and write a comprehensive review paper on each topic.

**General Education Requirements:** Satisfies the General Education Writing Intensive and Capstone Experience Requirements

**Prerequisites:** PSY 241 and PSY 245; senior standing.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **PSY 492 - Problems in Psychology**

Provides the opportunity to carry out a particular research problem under supervision. Only 6 hours of credit will count toward the psychology major.

**Prerequisites:** PSY 241, PSY 245 and permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: Ar

## **PSY 493 - Field Experience in Psychology**

Practical experiences in a wide variety of applied settings such as schools, psychological clinics, hospitals, and government and private agencies. Requirements include a written proposal outlining the experience planned, goals of the plan, relationship of the course to the student's program, periodic conferences with the faculty supervisor and a final written report. Three credit hours may fulfill major requirements and only 6 hours may count toward graduation.

**Prerequisites:** PSY 241, PSY 245; nine hours in psychology and permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1-3

## **PSY 494 - Senior Research Project**

Students will develop a research project in consultation with the instructor. The student will do an extensive library search of background material, write a proposal, conduct the research and write an APA style report. May be repeated for credit but not more than 6 credit hours total will be allowed for degree credit.

**General Education Requirements:** Satisfies the General Education Writing Intensive and Capstone Experience Requirements.

**Prerequisites:** PSY 241, PSY 245 and permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1-3

## **SED 302 - Adapting Instruction for Students with Disabilities**

Develops knowledge and understanding of students with disabilities. Topics include: adaptation of instruction, legal and ethical issues, family and social relationships and collaboration between school and community agencies.



**Course Typically Offered:** Fall & Spring

Credits: 3

### **SFR 100 - Introduction to Forest Biology**

Introductory concepts related to forest plants, animals, environment and ecology. Lec 3.

**General Education Requirements:** Satisfies the General Education Lab in the Basic or Applied Sciences requirement when taken with SFR 102.

**Course Typically Offered:** Spring

Credits: 3

### **SFR 101 - Introduction to Forest Resources**

A week-long field course designed to introduce students to the forest and its components, its ecology, and its use by society.

**General Education Requirements:** Satisfies the General Education lab in the Basic or Applied Sciences Requirement when taken with SFR 111 and SFR 112.

**Course Typically Offered:** Fall

Credits: 1

### **SFR 102 - Structure and Function of Woody Plants Laboratory**

Introductory concepts on the anatomy and structure of woody plants with an emphasis on the relationship between form and function.

**General Education Requirements:** Satisfies the General Education Lab in the Basic or Applied Sciences requirement when taken with SFR 100.

**Corequisites:** SFR 100 or PSE 100 or BIO 100

**Course Typically Offered:** Spring

Credits: 1

### **SFR 103 - Introduction to Forest Resource Professions**

Introduction and overview of global, North American, and Maine forest resources, current and historical use by humans, history of forest regulation and policy, forest stewardship and land ethics, measurement and economics of forest resources, history and development of forest resource professions, and career options and professional societies in forest resources. Course may have field trips during class times.

**Course Typically Offered:** Fall

Credits: 1

### **SFR 106 - Forest Land Navigation and Outdoor Preparedness**

A hands on, in the field introduction to the basics of forest land navigation for students majoring in natural resources. Natural resource professionals often work alone or in small teams in remote locations and off trail. Preparation and planning are the key to safe, successful fieldwork. The course stresses the use of topographic maps and imagery commonly used by natural resource professionals and how to use them in conjunction with compasses and GPS units. This course does not cover wilderness first aid. Lec 1 Lab 3

**Prerequisites:** SFR 101 or Permission

**Course Typically Offered:** Fall

Credits: 1

### **SFR 107 - Forest Vegetation**

An introduction to the identification, distribution, taxonomy, silvics and utilization of North American tree species. Emphasis on the dominant forest cover types typical of each region of the U.S. together with their associated shrub and herbaceous communities. Site affiliations and the relationships to selected vertebrate wildlife species are included. Course may include field work during and outside of the course's scheduled times.

**Prerequisites:** Majors in Forest Operations, Bioproducts, & Bioenergy; Forestry; Parks, Recreation and Tourism; and Ecology & Environmental Science with a concentration in Forest Ecosystem Science

**Course Typically Offered:** Fall

Credits: 3

### **SFR 108 - Introduction to Arboriculture and Community Forestry**

Introductory course in arboriculture (study of trees on an individual basis) and community forestry (management of trees in a community/urban setting). The student studies the management of the urban/community forests, the people interaction/dynamics when dealing with community trees, and the development and purpose of a community forestry management plan. The course includes identifying valuable features, growth habits, and cultural requirements of urban trees and shrubs.

**Course Typically Offered:** Fall

Credits: 3

### **SFR 109 - Introduction to Arboriculture Lab**

The principles of tree care, pruning, repair and maintenance are covered. Preparation to become a licensed Maine arborist and/or ISC Certified Arborist is provided.

**Corequisites:** SFR 108

**Course Typically Offered:** Fall

Credits: 1

### **SFR 111 - Forest Through Time**

Basic concepts of science will be used to explain how forests have responded to natural and human influences over time. This foundation will be used to explore how a range of uses will affect the future sustainability of forest systems and their ability to meet society's needs.

**General Education Requirements:** Satisfies the General Education Application of Scientific Knowledge and Population & the Environment Requirements when taken with SFR 112. Satisfies the General Education Lab in the Basic or Applied Sciences and Population and the Environment Requirements when taken with SFR 101 and SFR 112.

**Course Typically Offered:** Fall & Spring

Credits: 1

### **SFR 112 - Forests Through Time: Discussions**

Weekly discussions based on information presented in SFR 111.

**General Education Requirements:** Satisfies the General Education Application of Scientific Knowledge and Population and the Environment Requirements when taken with SFR 111. Satisfies the General Education Lab in the Basic or Applied Sciences and Population and the Environment Requirements when taken with SFR 101 and SFR 111.

**Prerequisites:** SFR 111 or concurrently

**Course Typically Offered:** Fall & Spring

Credits: 2

## **SFR 120 - Understanding Wood**

Laboratory based hands-on course provides experience in the selection, planning, and implementation of woodworking projects. Students learn principles of safe operation of power and hand tools, basic wood material properties related to machining, and the fundamentals of wood gluing and finishing. Student projects will require additional time during scheduled woodshop hours.

**Course Typically Offered:** Spring, Even Years

Credits: 1

## **SFR 150 - Introduction to Tourism**

Introduction to tourism is designed to help students of all disciplines understand one of the largest industries in the world. This course will introduce the nature, structure and complexity of travel and tourism with special emphasis on nature-based tourism-how it's defined, how it evolved, and its magnitude globally. Students will examine types and functions of various stakeholders in the creation and delivery of tourism including governments, private sector and communities. Finally this course will explore the motivations for travel affecting demand for tourism.

**Course Typically Offered:** Spring

Credits: 3

## **SFR 205 - Forest Measurements and Statistics**

Encompasses methods used to measure log, tree, stand and forest-level attributes. Principles of summarizing individual tree data and of using statistics in forest management are presented. Course may have field trips during class times.

**General Education Requirements:** Satisfies General Education Requirement for Quantitative Literacy.

**Prerequisites:** SFR 107 or Permission

**Course Typically Offered:** Spring

Credits: 3

## **SFR 208 - Geomatics, Coordinate Geometry, and GPS**

An introductory course presenting fundamental concepts in land resource measurements, applied mathematics, mapping techniques and practical applications of GPS including; linear and angular measurement, computations employing coordinate geometry, area determination, land recording systems, compass navigation, basic skills of map preparation, and practical GPS

Skills. Course may include field work during and outside of the course's scheduled times.

**Prerequisites:** MAT 122

**Course Typically Offered:** Fall

Credits: 4

## **SFR 211 - Forest Operations Planning**

Principles of planning industrial forest operations in the United States and Canada with specific emphasis on the logging industry in Maine. Addresses the basic components of a forest operations plan from equipment selection, implementation of best management practices, road location, stream crossing selection, administration, and production analysis. Labs will have field trips during schedule periods.

**Prerequisites:** MAT 122 or MAT 126 and SFR 106 and SFR 107

**Course Typically Offered:** Fall

Credits: 4

## **SFR 215 - Introduction to Forest Bioproducts and Bioenergy**

Introduction to renewable products (including energy) derived from the forest. The fundamentals of their production systems will be described through required wood forms (i.e. log diameter/species) and processing systems. The attributes and use of these products will be described from physical, chemical, mechanical, biological, and lifecycle perspectives.

**General Education Requirements:** Satisfies the General Education Applications of Scientific Knowledge Requirement.

**Prerequisites:** MAT 122, and CHY 121 And CHY 123

**Course Typically Offered:** Spring

Credits: 3

## **SFR 220 - Environment and Society**

Introduces the concepts and principles necessary to understand the connections between human behavior and environmental conditions. The course includes a review of the conservation and environmental movements in the United States, tracing changing American values towards forests and other natural resources over time. Students learn how to critically analyze the social, economic, and environmental aspects of various case studies concerning society-environment connections by evaluating diverse information sources.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Population and the

Environment Requirements.

**Course Typically Offered:** Spring

Credits: 3

### **SFR 222 - Environmental Communication Skills**

The nature and problems of environmental communication, with opportunities to practice communication through a range of exercises.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions Requirement.

**Course Typically Offered:** Fall

Credits: 3

### **SFR 225 - Readings in Outdoor Recreation**

Selected authors and literature will be studied and discussed to familiarize PRT majors with the breadth and complexity of the field. Rec 3.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and Writing Intensive Requirements

**Course Typically Offered:** Fall

Credits: 3

### **SFR 226 - Park Systems of the World**

An examination of national parks as cultural identity. Topics include the genesis and rate of spread of the national parks idea, the cultural/political/economic environment of national parks, parks and the natural environment, comparative park system administration, and the trend and condition of the world's park systems. Lec 3.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Course Typically Offered:** Fall

Credits: 3

## **SFR 228 - Forest Recreation Management**

A broad yet comprehensive study of the theories, problems and techniques of managing recreation systems in both the public and private sectors. Emphasis given to current recreation management issues. Rec 3.

**Course Typically Offered:** Fall

Credits: 3

## **SFR 236 - Commercial Outdoor Recreation Management**

Students will understand and analyze the major elements of commercial outdoor recreation business strategic planning and management, including history and trends, marketing, operational management, financial management, strategic planning, and programming principles. Students will explore the commonalities and differences between public, private, and non-profit sectors focused on providing outdoor recreation opportunities in Maine. Course may have field trips during class times.

**Prerequisites:** SFR 150 or permission

**Course Typically Offered:** Fall

Credits: 3

## **SFR 300 - Field Practice in Forest Resources**

An intensive three-week course providing field experience and developing skills necessary for the professional management of forest resources. This course reinforces, integrates, and evaluates skills such as: Field and equipment safety, orienteering, mapping, forest measurements, and resource assessments (e.g., trails, roads, forest conditions, and harvest operations). Students work closely with faculty and staff to gain field experience, demonstrate skills, and develop final reports and presentations. A First Aid card from an accredited agency is needed prior to taking the class.

**Prerequisites:** SFR 100, SFR 102, SFR 103, SFR 106, SFR 107, SFR 205, SFR 208, SFR 211, and SFR 215

**Course Typically Offered:** Summer

Credits: 3

## **SFR 319 - Biomaterials Deterioration, Protection, Bioconversion**

The study of the agents involved in both the destruction as well as the bioconversion of structural biomaterials and biomass into advanced structural products and bioenergy, with a focus on wood and lignocellulose biomaterials. The course also provides background on fungal bioprocessing and biocidal protection systems. Basic science and technology principles are taught to provide an understanding of how lignocellulose and other biomaterials are degraded biologically and chemically, and how these

materials can be protected. The course covers basic lignocellulose degradation principles and how wood, in particular, is affected by fungal decay, insect attack, marine borer damage, and non-biological agents (fire, weathering, etc.). Also covered is the use of biological agents for biotechnological applications, e.g., in converting wood and lignocellulose into chemical products such as biofuels. The chemical and biochemical mechanisms involved in biodegradation are discussed. The last third of the course reviews methods for protection of structural biomaterials from deterioration agents including the use of preservative chemicals and the use of proper design techniques. The course also reviews the importance of fungi and bacteria in the environment with regard to carbon cycling and the concerns associated with the use of traditional chemicals for preservative treatment. Lec 3.

**Prerequisites:** WSC 212.

**Course Typically Offered:** Spring, Odd Years

Credits: 3

### **SFR 345 - Special Problems in Forestry**

Original investigation and/or readings on forest resources problems, the subject to be chosen after consultation with staff.

**Prerequisites:** Open to high-ranking juniors and seniors

**Course Typically Offered:** Fall, Spring, Summer

Credits: Ar

### **SFR 346 - Special Problems in Forest Operations, Bioproducts, and Bioenergy**

Original investigation in forest engineering, the subject to be chosen after consultation with the staff. Open to high-ranking juniors and seniors.

**Course Typically Offered:** Fall, Spring, Summer

Credits: Ar

### **SFR 347 - Special Problems in Parks, Recreation, and Tourism**

Original investigation in Recreation Resources, the subject to be chosen after consultation with the staff. Open to high-ranking juniors and seniors.

**Course Typically Offered:** Fall, Spring, Summer

Credits: Ar



## **SFR 349 - Applied Forest Ecology and Silviculture**

A survey of forest ecosystem management designed for students majoring in related fields. Lectures apply concepts in forest ecology, biology, silviculture, harvesting, wood products utilization, and economics to the protection and management of public and private forest land. Emerging concepts and technologies relating to forest ecosystem management and sustainability are presented relative to defining and achieving land management goals and objectives. Laboratories reinforce practical field skills in locating, inventorying, and assessing stands and forests. Lec 3 Lab 3. Course may have field trips during class times.

**Prerequisites:** Junior standing in EES, FSC, PRT, or WLE

**Course Typically Offered:** Fall

Credits: 4

## **SFR 355 - Visitor Behavior and Management**

Study of outdoor recreation user behavior as it impacts the planning, design and management of outdoor recreation opportunities. Emphasis on social/psychological principles that alter behavior and satisfaction in recreation experiences. Rec. 3.

**Course Typically Offered:** Spring

Credits: 3

## **SFR 391 - Cooperative Education in Forestry**

Practical experience for the undergraduate student, combining work in a business firm or public agency with academic courses and supervision. Opportunity for student to gain experience, to integrate classroom learning with job performance, and to develop future placement possibilities.

(Pass/Fail Grade Only.)

**Prerequisites:** junior standing and permission of the Forestry Curriculum Committee.

**Course Typically Offered:** Fall, Spring, Summer

Credits: Ar

## **SFR 392 - Cooperative Education in Forest Operations, Bioproducts, and Bioenergy**

Practical experience for the undergraduate student, combining work in a business firm or public agency with academic courses and supervision. Opportunity for student to gain experience, to integrate classroom learning with job performance, and to develop future placement possibilities.

(Pass/Fail Grade Only.)

**Prerequisites:** junior standing and permission.

**Course Typically Offered:** Fall & Summer

Credits: 1 - 16

### **SFR 393 - Cooperative Education in Parks, Recreation, and Tourism**

Practical experience for the undergraduate student, combining work in a business firm or public agency with academic courses and supervision. Opportunity for student to gain experience, to integrate classroom learning with job performance, and to develop future placement possibilities.

(Pass/Fail Grade Only.)

**Prerequisites:** junior standing and permission.

**Course Typically Offered:** Summer

Credits: 1-16

### **SFR 395 - Internship for Forest Operations, Bioproducts and Bioenergy**

A professional activity under the general supervision of an experienced professional with a high degree of responsibility placed on the student. Learning objectives are pre-established and agreed upon between the faculty coordinator and the placement supervisor. Not normally repeated.

**Course Typically Offered:** Fall, Spring, Summer

Credits: Ar

### **SFR 396 - Internship in Parks, Recreation and Tourism**

A professional activity under the general supervision of an experienced professional with a high degree of responsibility placed on the student. Learning objectives are pre-established and agreed upon between the faculty coordinator and the placement supervisor. Not normally repeated.

**Course Typically Offered:** Fall, Spring, Summer

Credits: Ar

### **SFR 397 - Field Experience in Forestry**

A field experience is a professional activity participated in by students under the supervision of a practicing professional in the field. A high degree of responsibility is placed on the student for developing a study plan including learning objectives and their assessment. The study plan must be approved by a faculty member prior to the field experience. May be repeated. Can be taken for 0 credit as a Pass/Fail Grade only.

**Prerequisites:** permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 0-6

### **SFR 398 - Field Experience in Forest Operations, Bioproducts and Bioenergy**

A field experience is a professional activity participated in by students under the supervision of a practicing professional in the field. A high degree of responsibility is placed on the student for developing learning objectives and securing the approval of a faculty member for academic credit for the learning involved. May be repeated.

**Course Typically Offered:** Fall, Spring, Summer

Credits: Ar

### **SFR 399 - Field Experience in Parks, Recreation and Tourism**

A field experience is a professional activity participated in by students under the supervision of a practicing professional in the field. A high degree of responsibility is placed on the student for developing learning objectives and securing the approval of a faculty member for academic credit for the learning involved. May be repeated.

**Course Typically Offered:** Fall, Spring, Summer

Credits: Ar

### **SFR 400 - Applied Geographic Information Systems**

An introduction to the methods and processes for the application of geographic information systems to natural resource management. Emphasis is placed on project planning and hands-on experience in systems operation. Course may include field work outside of the course's scheduled times.

**Prerequisites:** MAT 122.

**Course Typically Offered:** Spring

Credits: 4

### **SFR 401 - Timber Harvesting**

Examine and analyze timber harvesting practices in the United States and Canada with special emphasis on Maine. Discussion of harvest methods and systems, production, and regulations. Because of overlap, FSC 401 and FSC 502 cannot both be taken for degree credit. Lec 2, Lab 3.

**Course Typically Offered:** Fall

Credits: 3

### **SFR 402 - Advanced Forest Measurements and Models**

A continuation of the topics introduced in SFR 205 including methods used to measure log, tree, stand, and forest-level attributes. Students will also learn how to sample and analyze forest resources data including use of spreadsheets, databases, and stand projection models. Because of overlap, SFR 402 and SFR 503 cannot both be taken for degree credit, Lec 2 Lab 2. Course may have field trips during class times.

**Prerequisites:** SFR 205 or Graduate Standing.

**Course Typically Offered:** Spring

Credits: 3

### **SFR 403 - Forest Roads**

Design, construction, and maintenance of forest road systems and bridges, examination of road-vehicle interactions, and analysis of forest products transportation. Lec 2, Lab 3.

**Course Typically Offered:** Fall

Credits: 3

### **SFR 404 - Forest Operations Planning and Analysis**

Forest operations planning and analysis procedures, particularly as they pertain to timber harvest planning and administration in the context of an appreciation for other forest values, as well as social and environmental constraints.

**General Education Requirements:** Satisfies the General Education Capstone Experience Requirement.

**Prerequisites:** FSC 301, FSC 403, FSC 405 and WSC 425 or permission.

**Course Typically Offered:** Spring

Credits: 3

### **SFR 406 - Remote Sensing Image Interpretation and Forest Mapping**

Vertical and horizontal measurements from aerial photos, orthophotos, and topographic maps. Fundamentals of image interpretation, forest stand mapping, and forest disturbance monitoring from aerial and satellite-derived imagery. Laboratory training includes both manual and digital image interpretation and mapping methods.

**Prerequisites:** MAT 122 or SFR 208

**Course Typically Offered:** Spring

Credits: 3

### **SFR 407 - Forest Ecology**

Biological principles and environmental factors governing the natural establishment and development of forest trees and stands. Lec 3.

**Prerequisites:** FTY 107 or BIO 464 or permission.

**Course Typically Offered:** Fall

Credits: 3

### **SFR 408 - Silviculture**

Theory and practice of controlling the composition, growth, quality and regeneration of forest stands for human benefit. NOTE: Because of overlap, SFR 408 and SFR 509 cannot both be taken for degree credit..

**Corequisites:** SFR 407

**Course Typically Offered:** Fall

Credits: 3

### **SFR 409 - Forest Ecology and Silviculture Field Laboratory**

Measurement, assessment and analysis of forest vegetation from a biological and silvicultural perspective. Designed to develop understanding and proficiency in: silvical properties of northeastern tree species; forest regeneration, succession and stand dynamics; prescribing silvicultural treatments; and formulating silvicultural systems. Weekly labs and several one-day field trips.

**Prerequisites:** WLE 200 or concurrent enrollment in FES 407.

**Corequisites:** FES 408

**Course Typically Offered:** Fall

Credits: 2

### **SFR 410 - Forest Regeneration**

An overview of the principles and practices associated with the successful regeneration of forestlands in North America. Topics include natural and artificial regeneration, seed collection and handling, forest tree nurseries, site preparation, seedling quality and handling, genetics, disease, vegetation management, animal damage protection, early stand management, and ecological considerations.

**Course Typically Offered:** Spring

Credits: 3

### **SFR 412 - Winter Tree Identification**

Six week field course for identification of Maine Trees and shrubs in their winter condition.

**Prerequisites:** SFR 107 or Permission

**Course Typically Offered:** Spring

Credits: 1

### **SFR 434 - Recreation Site Planning and Management**

Principles and techniques are examined to manage recreation opportunities in natural resource settings. Course may have field trips during class times. The field trips are organized to reveal a diversity of recreation sites and associated planning and management by entities to provide quality recreation experiences while also preserving environmental resources conditions.

**Prerequisites:** SFR 228 or permission

**Course Typically Offered:** Fall

Credits: 3

### **SFR 439 - Plant Anatomy Structure and Function**

Examines vascular plant anatomy and structure with a focus on physiological, evolutionary and ecophysiological relationships. (Lec. 2, Lab 4)

Note: Due to overlap, FES 539 and FES 439 cannot both be taken for degree credit.

**Prerequisites:** BIO 100 or FES 100 or PSE 100.

**Course Typically Offered:** Spring

Credits: 3

### **SFR 444 - Forest Resources Economics**

Economics of domestic and international forest resources production, processing and distribution. Contributions of forest resources to local, regional, and national economies. Fundamentals of financial analysis. Evaluation of priced and unpriced forest resources for acquisition, taxation, management, and disposal. Because of overlap SFR 444 and SFR 544 cannot both be taken for degree credit.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions Requirement.

**Prerequisites:** ECO 120.

**Course Typically Offered:** Fall

Credits: 3

### **SFR 446 - Forest Resources Policy**

Mechanisms involved in, and influences on the evolution of national, state and private forest policies in the United States and other nations. Development of professional codes of ethics in Forestry and examination of professional, private business, environmental, and public sector ethical challenges, particularly in the formation of forest policies. Lec 3.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and Ethics Requirements.

**Course Typically Offered:** Spring

Credits: 3

## **SFR 450 - Processing of Biomaterials**

Understanding how the resources of the forests are used and processed is important. This course provides an overview of the machinery and processes used for manufacturing bioproducts including lumber, wood-based composites, veneer, lumber, pulp and paper and other forest products. The laws and standards under which production and evaluation of bioproducts occur are an important part of the course. The commercial measurement of forest resources is detailed as are the effects of timber defects on finished product quality. In addition to classroom lectures and discussions, the course includes field trips, during scheduled class periods, to various forest products manufacturing operations and laboratory exercises related to quality control techniques used in industry. Students enrolling in the course should have passed at least one course meeting the general education requirement for a science with lab or application of science.

**Prerequisites:** Junior or Senior Standing

**Course Typically Offered:** Fall, Even Years

Credits: 4

## **SFR 452 - Environmental Interpretation**

A mid-level course in the principles and techniques of environmental interpretation, with special reference to parkland settings. Interpretive planning, interpretation of complex subjects and controversy, ethics, special populations and research are discussed. Students are required to demonstrate their understanding and application of interpretive principles using examples from their field. Course may include field work during and outside of the course's scheduled times.

**Prerequisites:** PRT 352. Junior or senior standing or permission of instructor.

**Course Typically Offered:** Fall

Credits: 4

## **SFR 453 - Biocomposite Materials**

A comprehensive analysis of the influence of materials and processing parameters on the chemical, physical and mechanical properties of biocomposite materials. Principles of adhesion and adhesives technology and their impact on biocomposite manufacture and performance will be addressed. Laboratories will provide practical experience in the manufacture and evaluation of a variety of biocomposites produced using hot pressing, cold pressing, extrusion, and injection molding. Lec 3, Lab 3

**Prerequisites:** CHY 121 and CHY 123; SFR 215, SFR 450 and PHY 107 or PHY 111.

**Course Typically Offered:** Spring, Even Years

Credits: 4



## **SFR 454 - Wood Composites**

Development of structure/property relationships and the effect of process variables on the physical and mechanical properties of structural and non-structural wood composite materials including oriented strand board, medium density fiberboard, particleboard, hardboard, plywood, inorganic bonded composites, and wood/polymer composites. Analysis of a wood composite manufacturing process, including cost models, marketing, and project planning will be conducted by student teams as a capstone experience. Laboratory activities will be incorporated to illustrate a variety of composite manufacturing issues. Lec 2, Lab 3.

**General Education Requirements:** Satisfies the General Education Capstone Experience Requirement.

**Prerequisites:** Senior standing or permission of instructor.

**Course Typically Offered:** Spring

Credits: 3

## **SFR 455 - Bioenergy Sources, Systems and Environmental Effects**

A detailed introduction to the use of biomass for bioenergy and includes a broad review of biomass sources, processing systems, human health effects, potential environmental damage, pollution abatement, energy generating systems and the general effects of using renewable and non-renewable sources of energy on the human population. Common definitions, units and the basic thermodynamics of biomass use are discussed. Environmental issues including greenhouse gas emissions are examined along with the benefits and environmental concerns related to using renewable sources of bioenergy. Specific examples, volatile organic chemical release and energy use in drying forest resources are included. Scheduled labs involve field trips. Students enrolling in the course should have passed at least one course meeting the general requirement for science with lab or application of science.

**General Education Requirements:** Satisfies the General Education Population and Environment Requirement.

**Prerequisites:** Junior or Senior Standing

**Course Typically Offered:** Spring, Odd Years.

Credits: 3

## **SFR 457 - Tree Pests and Disease**

Applies concepts of tree disease and its development to their roles in forest dynamics and management. Relevant characteristics of tree pests are covered. Concepts are applied to common disease complexes found in Maine and other regions of North America. (Because of overlap SFR 457 and SFR 557 cannot both be taken for degree credit)

**Prerequisites:** BIO 100 or SFR 100

**Course Typically Offered:** Fall

Credits: 3

### **SFR 458 - Tree Pests and Disease Lab**

Identification of tree health problems and their management options. Course may include field work during and outside of the course's scheduled times.

**Prerequisites:** BIO 100 or SFR 100 or permission

**Course Typically Offered:** Fall

Credits: 1

### **SFR 460 - Mill Tour**

One-week inspection trip (taken during the second week of spring break) to representative manufacturers of wood and forest products selected for demonstration of typical plant operations. A written report is required.

**Prerequisites:** Junior standing in Forest Resources programs.

**Course Typically Offered:** Spring

Credits: 1

### **SFR 464 - Forest Resources Business, Marketing and Entrepreneurship**

This is a broadly based course with multiple facets related to the business aspects of forest resource transactions between buyers and sellers; the marketing of forest resources and the development and management of a forest resource related business. The course includes the principles of contractual agreements, detailed information about the markets for forest resources both local and international, the basic tenets of entrepreneurship and the fundamentals of business ownership, planning and management. In addition to basic lectures and projects, practitioners discuss their experiences and share information about business management, contracts, the ethics of the buyer-seller interactions and the marketing of products. A semester project requires at least one field visit outside of scheduled times. Students enrolling in the course should have passed at least one course meeting the general education requirement for science with lab or application of science. Course may have field trips during class times.

**Prerequisites:** Junior or Senior Standing

**Course Typically Offered:** Spring

Credits: 3

### **SFR 471 - Principles of Tourism Management and Planning**

Focus is on the application of tourism management and planning principles to natural environments and creating sustainable tourism environments/economies; tourism impacts on sensitive environments; needs of tourists, developers, managers and the local residents; and trends in tourism, with emphasis on the Northeast. Rec 3.

**Prerequisites:** PRT 352.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

## **SFR 476 - Forest Management I**

Application of both traditional field forestry skills and modern software to develop a practical plan for the management of a real, small-woodland scale working forest.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** Senior standing in Forestry or Forest Operations Science or permission of instructor.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

## **SFR 477 - Forest Landscape Management and Planning**

Integration of biophysical and socioeconomic sciences for the multiple use management to achieve desired products, services and conditions of forest lands. Application of modern analytical procedures for strategic, tactical and operational forest planning up to the landscape level. Because of overlap SFR 477 and SFR 577 cannot both be taken for degree credit. Course may have field trips during class times.

**Prerequisites:** SFR359 or Pre or Co-requisite of SFR 409 or SFR 509 and Pre or Co-requisite of SFR 444 or SFR 544

**Course Typically Offered:** Fall

Credits: 3

## **SFR 478 - Tools for Forest Management**

Lab support for SFR 444/544 and SFR 477/577. Hands-on experience with tools useful for forest management, including: database, mapping, growth and yield programs; mathematical techniques; and landscape management systems.

**Corequisites:** Co-requisites: SFR 444/544 and SFR 477/577

**Course Typically Offered:** Fall

Credits: 1

### **SFR 479 - Environmental Attitudes and Behaviors**

Explores the relationship between human behavior and the natural environment through a variety of social and environmental psychology constructs including: intrinsic and instrumental values, beliefs, attitudes, perceptions of control, and social norms.

**Course Typically Offered:** Spring, Even Years

Credits: 3

### **SFR 480 - Wilderness and Protected Areas Management**

Historical overview of wilderness and protected area management in the United States involving western cultural influences such as Beowulf, Christianity, and Romanticism. Basic concepts of the unique management problems and opportunities associated with wilderness and wild and scenic river systems. Ideas will be explored on how to deal with the complexities of wilderness subsystems, their values, and their uses in the United States as well as international context.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition Requirement.

**Prerequisites:** SFR 228

**Course Typically Offered:** Spring

Credits: 3

### **SFR 482 - Industrial Ecology and Life Cycle Assessment**

Introduction to the theory and practice of environmental life cycle assessment (LCA) and industrial ecology. Students will review cases, do problem sets, learn how to use LCA software, and conduct a project.

FTY 482 and FTY 582 are identical courses.

**Prerequisites:** CHY 121 or BMB 207, and either FTY 104 or MAT 215 or MAT 232, and either ECO 100 or ECO 120, or permission.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

## **SFR 491 - Senior Capstone in Parks, Recreation and Tourism**

Selected issues and trends facing the recreation and parks profession today. Serves as the capstone experience, integrating all of the course work for Parks, Recreation and Tourism students.

**General Education Requirements:** Satisfies the General Education Writing Intensive and Capstone Experience Requirements.

**Prerequisites:** Senior standing and permission.

**Course Typically Offered:** Spring

Credits: 3

## **SFR 492 - Capstone Directed Study**

One student or a group of students select a problem in natural resource utilization, management, or policy, and prepare a prospectus and ultimately a detailed technical report on the topic. Each student or group will work closely with one or more faculty who agree to serve as mentors. Capstone projects are highly integrative of topics covered in the undergraduate program and involve applying knowledge to field- or lab-based activities. Study results are presented in an oral presentation and a final technical report.

**General Education Requirements:** Satisfies the General Education Writing Intensive and Capstone Experience Requirements.

**Prerequisites:** Senior Standing in FBB, FTY, or PRT

**Course Typically Offered:** Fall & Spring

Credits: 3

## **SFR 493 - Sustainable Tourism Planning**

The course provides a basis for a tourism destination service learning project involving natural and cultural attractions. The project will involve developing, facilitating, evaluating and documenting the tourism destination planning process. Specific topics include tourism potential evaluation, tourism sociocultural and environmental impacts, community-based tourism planning, tourism regional and site planning, and strategic tourism planning. The course requires field trips within and outside of scheduled class periods.

**General Education Requirements:** Satisfies the General Education Writing Intensive and Capstone Requirements.

**Prerequisites:** Senior Standing in PRT or Permission

**Course Typically Offered:** Fall

Credits: 3

## **SFR 498 - Senior Research I**

An original investigation of a problem in Forest Ecosystem Science, under the guidance of a faculty member. Students will select an area of study, perform a literature search and prepare a written study plan for their research.

**General Education Requirements:** Satisfies the General Education Writing Intensive and Capstone Experience Requirements.

**Prerequisites:** permission and junior standing in Forest Ecosystem Science and Conservation.

**Course Typically Offered:** Fall & Spring

Credits: 2

## **SFR 499 - Senior Research II**

Students will complete the research initiated in FES 498 and prepare a written final report. The completed project should demonstrate the student's ability to understand and apply scientific principles in research.

**General Education Requirements:** Satisfies the General Education Writing Intensive and Capstone Experience Requirements.

**Prerequisites:** FES 498 and senior standing.

**Course Typically Offered:** Fall & Spring

Credits: 2

## **SMS 100 - Introduction to Ocean Science**

A non-laboratory survey of the broad field of marine science, stresses the interconnections among aspects of oceanography, marine biology and ecology, living marine resources and human interactions with the marine environment. Practical applications of basic scientific principles are stressed.

**General Education Requirements:** Satisfies the General Education Applications of Scientific Knowledge and Population and the Environment Requirements.

**Course Typically Offered:** Fall

Credits: 3

## **SMS 108 - Beaches and Coasts**

An introduction to coastal landforms, including beaches, salt marshes, tidal flats and sea cliffs, their origins, global distribution,

and associated nearshore processes. Human impacts to the coastal zone, including coastal erosion, land loss and management, and human responses to sea-level change are considered. Course may have field trips during class times. Lec 3. (This course is identical to ERS 108.)

**General Education Requirements:** Satisfies the General Education Applications of Scientific Knowledge and Population and the Environment Requirements.

**Course Typically Offered:** Spring

Credits: 3

### **SMS 110 - Concepts in Oceanography**

Basic concepts in physical, geological, chemical and biological oceanography will be discussed. Also includes an introduction to the relationship between the ocean and the atmosphere. Ends with a discussion of global change issues. Practical applications of basic scientific principles will be emphasized. May not be used for credit in the Marine Science major. (Offered at the Frederick Hutchinson Center, Belfast through the Continuing Education Division.) Course may have field trips during class times.

**General Education Requirements:** Satisfies the General Education Applications of Scientific Knowledge requirement when taken without SMS 111. Together with SMS 111, this course satisfies the General Education Lab in the Basic or Applied Sciences requirement.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **SMS 111 - Concepts in Oceanography Laboratory**

This course will support SMS 110: Concepts in Oceanography through laboratories on physical, chemical, and biological oceanography topics. Labs will include studies of marine organism from the Gulf of Maine, computer-based labs using online data, and use of laboratory equipment to measure various parameters. May not be used for credit in the Marine Science major. (Offered at the Fredrick Hutchinson Center, Belfast through the Continuing Education Division.) Course will include field trips during class hours and on weekends.

**General Education Requirements:** Satisfies the General Education Lab in the Basic or Applied Sciences requirement when taken with SMS 110.

**Course Typically Offered:** Spring, Even years

Credits: 1

### **SMS 120 - Introduction to Forensics**

An overview of current concepts and techniques associated with the investigation of crime. Emphasis is placed on scientific

methodologies and on issues associated with criminal justice. Focused examples highlight the limitations of investigative practices.

**General Education Requirements:** Satisfies the General Education Application of Scientific Knowledge Requirement.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **SMS 201 - Biology of Marine Organisms**

An introduction to the diversity, form, and function of marine organisms, and to marine environments and ecological processes. After a synopsis of the major groups of marine microorganisms, algae, plants, and animals, the course emphasizes the relationship between their structure (anatomy and morphology) and function (physiology), as well as their development and larval biology. The course considers diverse marine habitats and ecosystems (rocky intertidal, estuaries and salt marshes, mudflats, coral reefs, open ocean, continental shelf and slope, deep sea), accentuating their physical factors (temperature, salinity and desiccation, solar radiation, oxygen, pressure) that affect their inhabitants. Lec 3.

**Prerequisites:** BIO 100 and SMS 100, both with a grade of C- or better, or permission.

**Course Typically Offered:** Spring

Credits: 3

### **SMS 203 - Introduction to Integrative Marine Science**

Focusing on key topics in Marine Science research, students explore the nature of inquiry, elements of experimental design, data presentation, elementary statistics, and interpretation of scientific papers. Hands on activities introduce basic concepts in the biology of marine organisms, observational skills, data literacy and experimentation.

**Prerequisites:** Marine Science Majors only; Grade of C- or higher in SMS 100 and BIO 100 or permission.

**Corequisites:** SMS 201, may be waived with permission.

**Course Typically Offered:** Spring

Credits: 1

### **SMS 204 - Integrative Marine Science II: Physics and Chemistry of Marine Systems**

Integrates basic principles of physics and chemistry with an understanding of the marine environment and how marine organisms function in their environment. The lectures, with integrated laboratory exercises and computer simulations in physics and chemistry, are designed to stimulate critical thinking and provide students with specific skills relevant to studying marine habitats. The first half of the semester will focus on physics; topics include swimming strategies and physics of fluids; waves, and



propagation of sound and light in the ocean. The second half of the semester will focus on water quality in coastal marine ecosystems; topics include the role of water quality in marine ecosystems and measurement of marine water quality. Data collection, analysis, and presentation skills are emphasized. Lec 2.

**Prerequisites:** MAT 122 and SMS 203 and PHY 111 (or PHY 121) and CHY 121/123, all with a grade of C- or better, or permission.

**Course Typically Offered:** Spring

Credits: 2

## **SMS 211 - Introduction to Aquaculture**

Principles and practices of aquaculture from international, national and local perspectives. Includes field trip. (Students may not take both SMS 211 and AVS 211 for credit).

**General Education Requirements:** Satisfies the General Education Applications of Scientific Knowledge Requirement.

**Course Typically Offered:** Fall

Credits: 3

## **SMS 230 - Introduction to Marine Policy and Fisheries Management**

This course focuses on the human dimensions of ocean conservation and management, with emphasis on marine fisheries management in the United States. Students will be introduced to a variety of tools and policy approaches for managing complex marine ecosystems. Discussion and readings will highlight current and historical challenges facing oceans management, as well as the role of scientists and other stakeholders in marine conservation. Potential issues addressed include ecosystem-based management, fishing communities, collective action dilemmas, bycatch and gear technology, marine protected areas and habitat, marine mammal and protected species conservation, aquaculture policy, and global climate change.

**General Education Requirements:** Satisfies the General Education Population and Environment Requirement.

**Course Typically Offered:** Fall

Credits: 3

## **SMS 300 - Marine Ecology**

An introduction to fundamental ecological principles in the context of marine communities. Uses examples from marine ecosystems to illustrate general principles of general ecology such as predation, competition, and nutrient cycling. Focuses on the ecology of major marine ecosystems such as estuaries, sea shores and benthic communities and on aspects of applied ecology such as fisheries management. Includes two days of field work at the Darling Marine Center. Not open to students who have taken BIO 319 or WLE 200. Course may have field trips during class times.

**Prerequisites:** BIO 200 or SMS 201.

**Course Typically Offered:** Fall

Credits: 3

### **SMS 302 - Oceanography**

An overview of geological, chemical, physical and biological oceanography and the way they interact. Topics include plate tectonics and evolution of ocean basins, physical and chemical characteristics of sea water, atmosphere-ocean coupling, two- and three-dimensional ocean circulation, waves and tides, sedimentation, planktonic organisms, productivity, pelagic ecosystems, biological-physical coupling, and biogeochemical cycles. Lec 3.

**Prerequisites:** CHY 122 and MAT 126 and PHY 112 or PHY 122 and SMS 100 all with a grade of C- or better, or permission.

**Course Typically Offered:** Fall

Credits: 3

### **SMS 303 - Integrative Marine Science III: Oceanography**

Integrates the principles and methodologies behind planning and executing field and laboratory procedures to collect scientific measurements with approaches to data analysis, interpretation and scientific presentation. It does this specifically within the context of oceanography. A mixture of integrated laboratory exercises, field trips and computer simulations designed to illustrate the end-to-end process of proposing, planning, carrying out, analyzing, interpreting and reporting on (written and oral) scientific measurements. Meets for 4 hours per week and may have field trips during class times.

**Prerequisites:** CHY 122 and MAT 126 and PHY 112 or PHY 122 and SMS 203 and SMS 204, all with a grade of C- or better, or permission.

**Course Typically Offered:** Fall

Credits: 2

### **SMS 304 - Integrative Marine Science IV: Comparative Physiology, Cellular and Molecular Biology**

Integrates the principles and methodologies of physiology, cell and molecular biology and population genetics using marine models. Includes lectures, integrated laboratory exercises and gene analysis. Designed to illustrate the application of physiology, cellular and molecular biological techniques to the study of marine systems. Students will participate in hands-on laboratory exercises and data analysis, interpretation and reporting (written and oral).

**Prerequisites:** BMB 280 and SMS 303 or permission.

**Course Typically Offered:** Spring

Credits: 2

### **SMS 309 - Techniques in Shellfish Aquaculture**

Residential course taught at the University's Darling Marine Center. Explores the theory and practice of marine bivalve culture as conducted in the Northeastern U.S. Includes lectures, considerable "hands-on" experience, and field trips to commercial hatcheries and farms.

**Prerequisites:** General knowledge in biology or relevant work experience.

**Course Typically Offered:** Summer

Credits: 2

### **SMS 321 - Introduction to Fisheries Science**

Introduction to the assessment, management, conservation and exploitation of fisheries resources of commercial and recreational importance. Lec 3.

**Prerequisites:** BIO 100 or SMS 100 or permission.

**Course Typically Offered:** Spring

Credits: 3

### **SMS 322 - Biology of Marine Vertebrates**

This course covers the taxonomy, phylogeny and diversity of marine fishes, reptiles, birds and mammals. The course will discuss comparative functional morphology, physiology, sensory systems, ecology, behavior and life history strategies in relation to characteristics of the diverse marine habitats occupied by vertebrate animals. Students will also learn about distributions, population trends and impacts of human exploitation. Course will include field trips during class hours and on weekends.

**Prerequisites:** BIO 200 or SMS 201, with a grad of C- or better, or permission.

**Course Typically Offered:** Variable

Credits: 3

### **SMS 324 - Introduction to Research Diving**

This course provides an introduction to research diving and satisfies the 100 hours of required training for scientific divers as prescribed by the American Academy of Underwater Sciences (AAUS). This training is required to participate in scientific diving activities at many universities, including UMaine, and at all AAUS member organizations throughout the United States. Students will be instructed in advanced diving skills, dive rescue, oxygen administration, and research diving techniques. Practical field diving activities will be a large focus of the course. Following successful completion of course objectives, students will be eligible to participate in diving research projects as a scientific diver-in-training or scientific diver. Students may also be eligible to apply for applicable recreational diving certifications. Participation is not a guarantee for certification. The course is taught by the UMaine Diving Safety Officer (DSO), selected UMaine faculty, and guest lecturers experienced in using scuba diving as a research tool. Field trips during class time are required. Transportation to Orono to pool sessions will be provided.

**Prerequisites:** Permission

**Course Typically Offered:** Fall

Credits: 3

### **SMS 330 - Descriptive Physical Oceanography**

A comprehensive introduction to descriptive physical oceanography. Topics considered will range in scale from global to estuarine, and from decades to seconds. The course emphasis is the characterization of physical oceanic features and phenomena, how and why they arise and their practical importance.

**Prerequisites:** PHY 121, PHY 122.

**Course Typically Offered:** Fall

Credits: 3

### **SMS 350 - Undergraduate Seminar**

Literature review of topics selected from the current marine literature leading to the preparation and presentation of written and oral papers. Emphasis on synthesizing information from other courses offered as part of the marine science degree to provide an overall appreciation of the field of marine sciences. Course may have field trips during class times.

**Prerequisites:** junior or senior standing.

**Course Typically Offered:** Fall

Credits: 1-3

### **SMS 352 - Semester-by-the-Sea: Marine Ecology**

Marine communities and ecological interactions are studied through lectures, field trips along the rocky shore of Maine and laboratories. Concepts of bio-diversity, the food web and the role of physical and biological limiting factors are developed. Critical and creative thinking and problem solving are enhanced by designing and conducting experiments to test hypotheses. Data analysis and report writing are emphasized. (Taught at the Darling Marine Center.) Lec 2, Lab 4. Course may have field trips during class times.

**Course Typically Offered:** Fall

Credits: 4

### **SMS 354 - Thinking About the Ocean: A Question-based Approach to Learning Marine Sciences**

The purpose of the course is to challenge students to apply their knowledge of the marine science to answer questions about the ocean. The course is organized around a broad theme such as whales. Students then select a few broad questions such as "why do whales migrate" and "how will bowhead whales respond to climate change?" Students will work together to answer the questions, and will be encouraged to apply information from their introductory coursework and readings from the primary literature. These questions are designed to connect the theme to basic concepts from oceanography and biology, and topics will include: ocean biology and productivity, climate change, and evolution.

**Prerequisites:** BIO 100, SMS 100 and SMS 201.

**Course Typically Offered:** Fall

Credits: 3

### **SMS 373 - Marine and Freshwater Algae**

A comprehensive introduction to the algae (freshwater and marine), including their evolution, physiology, life histories, and ecology. All aspects of the course emphasize the fundamental roles of the algae in shaping the evolution of other life on Earth and determining characteristics of different ecosystems and foodwebs. Laboratory work will emphasize the study of living material and include special projects and field trips. Students will become competent microscopists. Course may have field trips during class times.

**Prerequisites:** BIO 200 or SMS 201 or permission.

**Course Typically Offered:** Spring

Credits: 4

### **SMS 400 - Capstone Research Experience in Marine Science**

Capstone research project or research paper for students obtaining the Bachelor of Science in Marine Science. Marine Science

majors must complete at least three credits of SMS 400 and one credit of SMS 404 to satisfy the Capstone requirement for graduation. Students are advised to complete SMS 400 during the senior year.

**General Education Requirements:** Together with SMS 404, this course satisfies both the General Education Writing Intensive requirement and the General Education Capstone Experience requirement. A minimum of 3 credits of SMS 400 & 1 credit of SMS 404 are needed to fulfill either requirement.

**Prerequisites:** 12 credit hours of SMS courses and a minimum of 60 credit hours in all university courses (junior standing)

**Course Typically Offered:** Fall & Spring

Credits: 1-4

### **SMS 401 - Critical Issues in Aquaculture**

Current and historically important issues facing the development of the aquaculture industry. Issues related to aquaculture will be researched by students who will present the issues in a series of debates. Course may have field trips during class times. This course may be repeated for up to six credits total. Lec 1.

**Prerequisites:** SMS 211, SMS 409 and SMS 420.

**Course Typically Offered:** Variable

Credits: 1

### **SMS 402 - Oceans and Climate Change**

Stresses the interdisciplinary nature of marine science by focusing on comprehensive oceanographic and marine ecosystems that reinforce geological, chemical, physical and biological principles and their linkages. Roles of oceans in regulating global climate will be emphasized. Climatic forcing and its impact on ocean environments and marine ecosystems will be discussed. Variability in the oceans and processes at a range of spatial and temporal scales are considered. Topics include: global carbon cycle and climate change, thermohaline circulation, influence of oceanic and climatic processes on marine populations, world fisheries and marine ecosystems, El Nino and decadal climate variability, Gulf of Maine oceanography and living marine resources, human activities and their impact on the environment. Lec 3.

**Prerequisites:** SMS 100 and Junior or Senior Standing

**Course Typically Offered:** Spring

Credits: 3

### **SMS 404 - Capstone Seminar in Marine Science**

Seminar required of all SMS students, preferably in the semester when SMS 400 is first elected. Students will discuss selected special topics in marine sciences with emphasis on principles of scientific communication (e.g., process, traditional and electronic styles of publication, ethics). Students will develop and present synopses of their SMS 400 projects in the seminar using IT tools (e.g. PowerPoint for oral presentations and preparation of poster displays).

**General Education Requirements:** Together with SMS 400, this course satisfies both the General Education Writing Intensive requirement and the General Education Capstone Experience requirement. A minimum of 3 credits of SMS 400 & 1 credit of SMS 404 are needed to fulfill either requirement.

**Prerequisites:** 12 credit hours of SMS courses and a minimum of 60 credit hours in all university courses (junior standing); students are advised to complete SMS 400 and SMS 404 during their senior year.

**Course Typically Offered:** Fall & Spring

Credits: 1

### **SMS 416 - Marine Engineering Literacy**

A hands-on project-based class. Major focus areas include: Programming, Sensors, and Robotics. By the end of the class, students should have a basic understanding of what programming is, and they will be able to build a simple electronic sensor, calibrate it and program its output to a computer, and build/program a Lego robot to do specific missions (for example, an underwater ROV or AUV taking data while diving in water).

**Prerequisites:** A grade of C or better in both SMS 204 and PHY 112 or PHY 122

**Course Typically Offered:** Spring

Credits: 3

### **SMS 420 - Fish Aquaculture I**

Part I of a two semester sequence. A comprehensive examination of finfish production methods. Covers aspects of fish anatomy and physiological responses to intensive culture methods. Water sources and water quality parameters and their effects on fish health will be examined. Fish culture systems from extensive pond culture to intensive land based recirculation systems and their effects on the environment will be described. Aspects of fish production at all life stages, beginning with brookstock management in this course and ending with on-growing fish to market the following semester, will be studied. Students will participate in selected techniques in fish aquaculture i.e., anatomy of fish species, live food production for larval fish, diagnostic procedures, drug residue testing, fish handling and anesthesia, spawning techniques, egg incubation techniques and computer applications during five weekday afternoon laboratories and two all day field trips. (This course is identical to AVS 420.) (Offered Fall-even years.) Lec 2, Lab/Field 4.

**Prerequisites:** SMS 211.

**Course Typically Offered:** Fall, Odd Years

Credits: 3

## **SMS 421 - Fish Aquaculture II**

A continuation of SMS 420. A comprehensive examination of finfish production methods. Covers aspects of fish production at all life stages, beginning with broodstock management in the first semester course (AVS/SMS 420) and ending with on-growing of fish to market. Aspects of fish production to be studied will cover genetic selection, feeding, health management, fish farm structure, processing fish and environmental factors. Principles and examples of disease prevention and control, such as husbandry, treatment, vaccination, natural defenses and bio-security. Major diseases of farmed fish and control measures will be presented. Students will participate in selected techniques in fish aquaculture i.e., anatomy of fish species, live food production for larval fish, diagnostic procedures, drug residue testing, fish handling and anesthesia, spawning techniques, egg incubation techniques and computer applications during five weekday afternoon laboratories and two all day field trips. Lec 2, Lab/Field 4. (Offered Spring-odd years.)

**Prerequisites:** AVS 420 or SMS 420.

**Course Typically Offered:** Spring

Credits: 3

## **SMS 422 - Biology of Fishes**

A comprehensive course in evolution, morphology, physiology, life histories and ecology of fishes. Emphasis will be integrating knowledge of functional and physiological design to understand how fish function and how they have adapted to diverse environments. Course will include field trips during class hours and on weekends.

**Prerequisites:** BIO 200 or SMS 201.

**Course Typically Offered:** Fall, Even Years

Credits: 3

## **SMS 425 - Applied Population Genetics**

Covers the biological, mathematical and statistical principles of population genetics. Topics include a discussion of the role of mutation, migration, selection and inbreeding in structuring the genetic variation for both Mendelian and quantitative traits in natural and artificial populations. Emphasis is placed on both the theoretical and experimental approaches to the study of population genetics and the application and importance of population genetics to disciplines such as marine science, wildlife and conservation biology, ecology and animal husbandry, including aquaculture.

**Prerequisites:** BIO 100 or permission.

**Course Typically Offered:** Spring

Credits: 3



## **SMS 449 - Aquaculture Systems**

Introduction to the application of engineering principles and practices to the commercial culture of marine and freshwater plants and animals. No engineering or engineering technology majors.

**Prerequisites:** SMS 211

**Course Typically Offered:** Fall

Credits: 3

## **SMS 450 - Field Experience in Marine Sciences**

An approved field, research or work experience that contributes to the academic major and for which academic credit is given. The program of study is agreed upon by the student and the faculty advisor and may include independent research or work experience in the public or private sector. May also be taken as a field or laboratory supplement to an SMS lecture course and as such is required for certain courses offered as part of the Semester-by-the-Sea program. A written report or reports are required. Course will include field trips during class hours.  
(Pass/Fail Grade Only.)

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1 - 16

## **SMS 467 - Fish Nutrition and Feeding**

Principles of nutrient requirements as they apply to fish. Feeding management of several commercially important species will be discussed.

**Prerequisites:** BMB 208 or CHY 122.

**Course Typically Offered:** Fall, Even Years

Credits: 3

## **SMS 480 - Semester-by-the-Sea: Biology of Marine Invertebrates**

Emphasis will be on body plan and design of marine invertebrates, including investigating how body design facilitates living in selected marine habitats. After a quick review of the marine phyla, lectures will discuss functional organization of invertebrates' bodies, including embryology and development. Emphasis in the lab sessions is on identification of coastal Maine invertebrates.

Lectures, labs and field trips are integrated into a single class experience that is taught one entire day per week at the Darling Marine Center. NOTE: Because of overlap, BIO 353 and SMS 480 cannot both be taken for degree credit. Course may have field trips during class times.

**Prerequisites:** SMS 100 and SMS 201 or BIO 200.

**Course Typically Offered:** Fall

Credits: 4

### **SMS 481 - Semester-by-the-Sea: Design of Marine Organisms: Momentum, Mass and Information Transfer**

Students use flumes and other flow devices to gain an understanding of the principles of momentum and mass transfer and then to discover how they influence form and function in marine organisms. Lectures prepare students to conduct their own laboratory observations: abiotic flows and model living organisms interacting with flows. A final integration adds sensory ecology and unsteady flow behaviors. Applications range from bacteria to invertebrates and vertebrates. Lecture and laboratory are combined into a day-long class period. Taught at the Darling Marine Center. Course will include field trips during class hours.

**Prerequisites:** BIO 200 or SMS 201 and PHY 112 or PHY 122.

**Course Typically Offered:** Fall, Odd Years

Credits: 4

### **SMS 482 - Semester-by-the-Sea: Human Impacts on the Ocean**

Examines the manner in which humans influence oceanic processes and the ways in which humans can assess these influences. Surveys various case examples of influences (both suspected and well-documented) such as alteration of river inputs to the oceans, contamination by toxic materials, eutrophication and habitat alteration. Focuses on how scientists determine whether or not a perturbation of normal oceanic process has occurred, what the pre-human condition might have been and how we predict future changes. Taught at the Darling Marine Center. Lec 3. Course will include field trips during class hours.

**General Education Requirements:** Satisfies the General Education Population and the Environment Requirement.

**Prerequisites:** SMS 302 or equivalent or permission.

**Course Typically Offered:** Fall

Credits: 3

### **SMS 485 - Comparative Animal Physiology**

A comparative approach to the functional adaptations of animals to diverse environments, with emphasis on underlying

physiological and biochemical mechanisms. Lec 3.

**Prerequisites:** BIO 200 or SMS 201, a year of chemistry and junior standing.

**Course Typically Offered:** Variable

Credits: 3

### **SMS 491 - Problems in Marine Science**

Undergraduate studies of current problems in marine science directed by individual faculty. May be experimental or theoretical independent research or directed readings by an individual student. May be repeated for credit.

**Prerequisites:** permission of instructor.

**Course Typically Offered:** Fall, Spring, Summer

Credits: Ar

### **SMS 497 - Independent Study in Marine Science**

A readings, lecture, laboratory or seminar study course arranged between instructor and individual students, covering selected topics or areas within the field of Marine Science. May be repeated for credit.

**Prerequisites:** permission of instructor.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1-4

### **SOC 101 - Introduction to Sociology**

Introduces the fundamental concepts, principles, and methods of sociology, analyzes the influence of social and cultural factors upon human behavior and evaluates effect of group processes, social classes, stratification, and basic institutions on contemporary society.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions Requirement.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **SOC 201 - Social Inequality**

Structural analysis of social inequality within American society and the global community. Emphasis on the causes, extent and social consequences of inequality, especially those based on race, gender, social class and the level of economic development.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** SOC 101 or permission.

**Course Typically Offered:** Fall

Credits: 3

## **SOC 202 - Social Problems**

The social bases of social problems. Topics may include poverty, racism and other forms of discrimination, crime and justice, health care, environmental issues, violence and terrorism, and family issues.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** SOC 101 or permission.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

## **SOC 208 - Problems of Violence and Terrorism**

The nature and causes of revolutionary and government-sponsored international terrorism. The future of terrorism and how to cope with it. The institutionalization of terrorism in pre-modern and contemporary totalitarian states. The social causes of war and social conflict. Social preconditions for the maintenance of a sustainable peace. An examination of the nature of human aggression.

**General Education Requirements:** Satisfies the General Education Ethics and Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** SOC 101 or permission.

**Course Typically Offered:** Spring

Credits: 3

## **SOC 214 - Crime and Criminal Justice**

The causes, extent and nature of crime in American society and the operation of the criminal justice system. Emphasis given to theories and dynamics of criminal behavior and to the efforts of police, courts and prisons to prevent and to control criminality.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions Requirement.

**Prerequisites:** SOC 101 or permission.

**Course Typically Offered:** Fall

Credits: 3

## **SOC 220 - Deviance and Social Control**

The study of deviant behaviors, individuals and groups, with emphasis on social order, power and identity. Use of the sociological perspective to explore definitions of deviance, theories of deviance, processes by which individuals become labeled as deviant, the nature of deviant identities and societal consequences of constructions of deviance.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions Requirement.

**Prerequisites:** SOC 101 or permission.

**Course Typically Offered:** Variable

Credits: 3

## **SOC 225 - Health, Illness & Society**

This course examines the social, cultural, and structural aspects of health, illness, and medicine in American society. Topics include the social conditions contributing to health and illness; the dynamics of doctor-patient interaction; the experiences of nurses, physicians, and other health care professionals; the organization and operation of hospitals and other health care settings; and health care reform and social policy. Special emphasis will be placed on gender, racial, and social class differences in the quality of health and of health care.

**Prerequisites:** SOC 101 and No SOC 240 topic: Health, Medicine and Society or SOC 240 topic: Health, Illness, and Society

**Course Typically Offered:** Spring

Credits: 3

## **SOC 240 - Topics in Sociology**

A second-level study of topics such as "Sociology of Youth," "Sociology of Countercultures," "Sociology of Sport," and "Urban Sociology." May be repeated for credit if the topics differ.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions Requirement.

**Prerequisites:** SOC 101 or permission.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **SOC 301 - Microsociology: Interaction and the Self**

The study of social interaction in small social settings, with emphasis on power and status. The negotiation of identity as a social process. The impact group structures on the self. Rituals as building blocks of micro-structures. Conversations as constructions of social reality. Informal group structures in large organizations.

**Prerequisites:** 6 hours of sociology or permission.

**Course Typically Offered:** Fall

Credits: 3

### **SOC 302 - Macrosociology: The Structure of Societies**

An examination of the structure and dynamics of large scale social organizations. Particular emphasis on institutional, formal, or bureaucratic and community structures characteristic of the industrialized and post-industrialized world.

**Prerequisites:** 6 hours of sociology or permission.

**Course Typically Offered:** Fall

Credits: 3

### **SOC 310 - Quantitative Reasoning in Sociology**

The use of statistical methods in sociological research. Topics include descriptive and inferential statistics and hypothesis testing. Special emphasis placed on sociological applications of statistical techniques, an understanding of when they are appropriate to use, and the information they yield.

**General Education Requirements:** Satisfies the General Education Mathematics Requirement.

**Prerequisites:** 6 hours of sociology or permission.

**Course Typically Offered:** Spring, Odd Years

Credits: 3

### **SOC 314 - Law and Society**

Presents a sociological perspective on law and the legal system in the United States and other societies. Topics include problems in defining law, sociological theories of the origins and consequences of law, international differences in modes of dispute resolution, the relation between law and social change, studies of the legal profession and legal discretion in the criminal justice system.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** SOC 101 and POS 100 or SOC 214 or SOC 220 or permission.

**Course Typically Offered:** Variable

Credits: 3

### **SOC 318 - Sociology of the Family**

Analysis of the modern family begins with a socio-historical examination of the effects of love, gender and poverty. Major topics include marriage and divorce, sexual behavior, family violence, parenting and ethnic families. Current families are analyzed from a social psychological viewpoint that includes the dynamic structure of relationships.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions Requirement.

**Prerequisites:** SOC 101 or permission.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **SOC 329 - Sociology of Gender**

Analysis of contemporary constructions of gender. Emphasis on the interpersonal and institutional dimensions of sexism and the prospects of social change.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** 6 hours of sociology or WST 101 or permission.

**Course Typically Offered:** Variable

Credits: 3

### **SOC 330 - Perspectives on Women**

Multidisciplinary and international analysis of the personal, interpersonal and institutional dimensions of women's lives. Explores commonalities among women as well as differences based on race, social class, age, and sexual identity.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** SOC 201 or WST 101 or permission.

**Course Typically Offered:** Variable

Credits: 3

### **SOC 337 - Sociology of Mental Illness**

Examination of the sociological concepts of mental illness. Analysis of the relationship between mental illness and the sociological factors responsible for these disorders. Cross-cultural examination of mental illness. The nature and structure of mental care institutions.

**General Education Requirements:** Satisfies the General Education Ethics and Social Contexts and Institutions Requirements.

**Prerequisites:** PSY 100 or SOC 101 or permission.

**Course Typically Offered:** Fall

Credits: 3

### **SOC 340 - Intermediate Topics in Sociology**

An intermediate-level study of topics such as "Sociology of Emotions," "Sociology of Science and Technology," and "Modern Sociological Theory." May be repeated for credit if the topics differ.

**Prerequisites:** 6 hours of sociology or permission.

**Course Typically Offered:** Variable

Credits: 3



## **SOC 371 - Immigration, Women and Society**

Examines the varied and complex experiences of immigrant women in the United States. Students will learn about the history of U.S. immigration in general and about the experiences of immigrant women in particular. Immigrant women's experiences will be examined through a lens that views gender as a social system that intersects with other social structures including race, religion, and social class. A central feature of this course is a service-learning oral history project which requires students to interview a woman who has immigrated to the United States, incorporate the interviewee's experiences into an analytical paper, and present the findings at the end of the semester. (This course is identical to WST 371.)

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives and Population and the Environment Requirements.

**Prerequisites:** WGS 101 and SOC 101, or permission.

**Course Typically Offered:** Variable

Credits: 3

## **SOC 390 - Logic of Sociological Inquiry**

Explores the relationship between theory and research. Specific topics include the nature of scientific proof in the social sciences, measurements of variables, hypothesis and theory testing, sampling, research design, ethical issues in research, and the relationship between research and policy-making.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** Sociology major with junior standing and 6 hours of sociology or permission.

**Course Typically Offered:** Spring

Credits: 3

## **SOC 460 - Major Ideas in Sociology**

The sociological theories of Marx, Weber, Durkheim, Mead and others. Developments in sociological theory as related to methodology, social issues, and current trends in contemporary sociology.

**Prerequisites:** Junior standing and 6 hours of sociology or permission.

**Course Typically Offered:** Fall

Credits: 3

## **SOC 482 - The Sociology of Religion**

Topics include: comparative religious cultures and beliefs; the social construction of religious beliefs; institutionalized religions and the resurgence of new sects and cults; major world religions and the way religion preserves and changes the social order; the encounter between religion and contemporary developments in science. Secularization and the future of religion.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions Requirement.

**Prerequisites:** SOC 101 and junior or senior standing or permission.

**Course Typically Offered:** Spring

Credits: 3

## **SOC 493 - Senior Thesis**

The completion of a senior thesis on a topic of the student's choice under the supervision of a sociology faculty member. Encourages excellent senior students to conduct a significant piece of sociological research. May be taken for only one semester, but normally students should plan to enroll for two semesters as a significant project usually cannot be completed in less than an academic year. May be repeated once for 3 additional credits.

**Prerequisites:** permission; sociology major with senior standing and a minimum GPA in sociology courses of 3.5; SOC 390, SOC 460 and statistics.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **SOC 495 - Internship in Sociology**

A supervised internship providing practical experience in a field placement and requiring parallel readings and study. Emphasis on the guided application of concepts and principles from related courses and structured readings to applied situations in the field. Students may take 3-9 credits. Not more than 6 credit hours may be used toward the departmental major.

**Prerequisites:** Sociology major with senior standing; GPA of at least 3.0 and permission of instructor.

**Course Typically Offered:** Fall & Spring

Credits: 3 - 9

## **SOC 497 - Departmental Projects I**

No description available.

**Prerequisites:** permission.

**Course Typically Offered:** Fall

Credits: 1-3

## **SOC 498 - Departmental Projects II**

No description available.

**Prerequisites:** permission.

**Course Typically Offered:** Spring

Credits: 1-3

## **SOC 499 - Senior Seminar**

Selected theoretical and empirical topics in Sociology. Serves as the capstone course for Sociology majors and will assume a knowledge of and will build upon, the material presented in the other required courses in the major. The intent of the course is to help students integrate their Sociology knowledge and to apply it in dealing with fundamental questions of social life and social theory.

**General Education Requirements:** Satisfies the General Education Capstone Experience Requirement.

**Prerequisites:** Sociology major with senior standing; SOC 301 and SOC 302 and SOC 390 and SOC 460 or permission.

**Course Typically Offered:** Spring

Credits: 3

## **SPA 101 - Elementary Spanish I**

A systematic study of the basics of the Spanish language. Equal emphasis on developing reading, comprehension, speaking and writing skills. For students with no previous study of Spanish or fewer than two years in high school.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Course Typically Offered:** Fall & Summer

Credits: 3 - 4

## **SPA 102 - Elementary Spanish II**

A continued study of the basics of the Spanish language. Equal emphasis is placed on developing reading, comprehension, speaking and writing skills. For students with no previous study of Spanish or fewer than two years in high school.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** SPA 101 or equivalent.

**Course Typically Offered:** Spring, Summer

Credits: 3 - 4

## **SPA 117 - Accelerated Spanish I**

An intensive, systematic study of the Spanish language at the beginning level that provides the equivalent of two semesters of beginning Spanish (SPA 101 and SPA 102) in one semester. For students with no previous study of Spanish or fewer than two years of high school Spanish.

**General Education Requirements:** Satisfies the Cultural Diversity and International Perspectives Education Requirement.

**Course Typically Offered:** Fall

Credits: 6

## **SPA 203 - Intermediate Spanish I**

An integrated approach. Reading texts as well as other materials will be employed to strengthen reading, writing and especially speaking and comprehension skills. Includes a systematic but gradual review of the essentials of Spanish grammar.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** SPA 102 or equivalent.

**Course Typically Offered:** Fall & Summer

Credits: 3 - 4

## **SPA 204 - Intermediate Spanish II**

A continuation of SPA 203 designed to strengthen reading, writing, speaking and comprehension skills.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** SPA 203 or equivalent.

**Course Typically Offered:** Spring, Summer

Credits: 3 - 4

## **SPA 217 - Accelerated Spanish II**

This course is a continuation of SPA 117 Accelerated Spanish I. A multi-media intensive study of Spanish language and culture that develops speaking, reading, writing, and listening skills. Equivalent to two semester of intermediate Spanish (SPA 203 and SPA 204).

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement

**Prerequisites:** SPA 117 or permission

**Course Typically Offered:** Spring

Credits: 6

## **SPA 301 - Introduction to Literary Theory**

The study of literary theory. Taught in Spanish. Foundation course for subsequent study of Spanish language texts of all genres.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** SPA 204 or permission.

**Course Typically Offered:** Variable

Credits: 3

## **SPA 305 - Applied Spanish**

Intensive oral and written practice in real-life situations. Development of confidence, accuracy, fluency and communicative strategies in formal and informal modes of expression. Guided development of idiomatic expression and structures; development of self-correct in speech and writing. Reinforcement through interactive situations.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives and Writing Intensive Requirements.

**Prerequisites:** SPA 204.

**Course Typically Offered:** Fall

Credits: 3

### **SPA 306 - Workshop in Speaking and Writing Spanish**

Develops fluency and accuracy in written and oral Spanish. Students help design course content through projects, performances, and problem-solving.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspective and Writing Intensive Requirements.

**Prerequisites:** SPA 305 or equivalent or permission.

**Course Typically Offered:** Spring

Credits: 3

### **SPA 307 - Readings in Peninsular Literature**

An overview of Peninsular Spanish literature. Provides practice in reading and analyzing culturally important texts. Includes a selection of genres and periods will be included. May be taken either before or after SPA 308.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives, Western Cultural Tradition and Writing Intensive Requirements.

**Prerequisites:** SPA 306 or permission.

**Course Typically Offered:** Variable

Credits: 3

### **SPA 308 - Readings in Spanish American Literature**

Emphasis on changes in the cultural phenomena, styles, themes and ideological position of texts from the beginnings of Hispanic American literature through romanticism, naturalism, the novel of the land, the "Boom" and avant-garde movements. May be taken before or after SPA 307.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** SPA 306 or permission.

**Course Typically Offered:** Variable

Credits: 3

### **SPA 309 - Spanish for the Professions**

Designed to provide students who have an intermediate-level knowledge of Spanish familiarity with specialized language and conventions in professional situations. Emphasis will be given to vocabulary and writing skills for professional use as well as awareness of Hispanic culture, cross-cultural communications and applications in Spanish speaking countries. Authentic up-to-date information will require regular use of the Internet as a source of reading. All classes are conducted in Spanish.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives and Writing Intensive Requirements.

**Prerequisites:** SPA 204 or equivalent.

**Course Typically Offered:** Variable

Credits: 3

### **SPA 310 - Contemporary Latin American Cultures**

This course will show students the contrasting and diverse cultures of Latin America. Students will learn about Latin American peoples' knowledge, technological development, modern life, and traditional cultures. The themes for reading and discussion will be about patrimony (what a people has from their past), art, enterprises, products, market, personalities, syncretism (mixing of cultures), migrations, history, science and society. Students will improve listening, speaking, reading and writing in Spanish.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives

**Prerequisites:** SPA 204

**Course Typically Offered:** Variable

Credits: 3

## **SPA 350 - Multi-disciplinary Readings in Spanish**

This course is intended to be taken in conjunction with an approved co-requisite course in another discipline, where key texts are originally written in Spanish. SPA 350 supplements the content of the course with appropriate readings in Spanish and promotes increased proficiency in Spanish through reading and discussion in Spanish of texts important to other disciplines. May be repeated for credit for a total of three credit hours.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** Permission

Credits: 1

## **SPA 390 - Topics in Spanish**

May include the study of literature, culture, cinema, the arts and media as expressed in Spanish-speaking countries. Topics vary. May be repeated for credit.

**Prerequisites:** SPA 204

**Course Typically Offered:** Variable

Credits: 1-3

## **SPA 401 - Golden Age**

A study of masterpieces of poetry and prose from the 16th and 17th centuries provides an overview of the period and critical abilities. Poetry by Garcilaso, Fray Luis, San Juan, Gongora, and Quevedo, etc. Prose readings include Lazarillo de Tormes, Diana, Suenos y discursos, and Novelas ejemplares etc.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives and Western Cultural Tradition Requirements.

**Prerequisites:** SPA 307 or SPA 308 or permission of the instructor.

**Course Typically Offered:** Spring, Odd Years

Credits: 3

## **SPA 403 - Cervantes**



A careful reading of the Spanish masterpiece, Don Quixote, including its historical background and continuing influence.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives and Western Cultural Tradition Requirements.

**Prerequisites:** SPA 307 or SPA 308 or permission.

**Course Typically Offered:** Fall, Even Years

Credits: 3

### **SPA 405 - Spanish Literature of the Nineteenth Century**

Discussion of the novel from "costumbrismo" to "realismo," the compromise of Spanish naturalism, and the Romantic movements between tradition and revolt.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** SPA 307 or SPA 308 or permission of instructor.

**Course Typically Offered:** Fall, Odd Years

Credits: 3

### **SPA 406 - Spanish Literature of the Twentieth Century**

Selections from the poetry, essays, and novels of the pre and Civil War period contextualized through readings in the history and thought of the times.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives and Western Cultural Tradition Requirements.

**Prerequisites:** SPA 307 or SPA 308 or permission of instructor.

**Course Typically Offered:** Variable

Credits: 3

### **SPA 409 - Contemporary Latin-American Short Story**

A study of Latin-American short story writers including discussion of such significant contemporary concerns as poverty, politics and religion, and such themes as the interplay of fantasy and reality and the relativity of madness.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** SPA 307 or SPA 308 or permission.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **SPA 410 - Latin American Novel**

The contemporary novel in Spanish America, with special attention on some of the novelists of the "Boom."

**General Education Requirements:** Satisfies the Cultural Diversity General Education Requirement

**Prerequisites:** SPA 307 or SPA 308 or permission

Credits: 3

### **SPA 411 - Contemporary Latin American Theater**

A study of the major Latin-American playwrights of the 20th century. Reading and analysis of plays, class discussion.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** SPA 307 or SPA 308 or permission.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

### **SPA 412 - Contemporary Peninsular Theater**

A study of major Spanish playwrights of the 20th Century. Reading and analysis of plays, class discussion.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** SPA 307 or SPA 308 or permission.

**Course Typically Offered:** Not Regularly Offered

Credits: 3

## **SPA 420 - Spanish Film**

Areas covered may vary and could include the following topics: national cinemas; director of note; the social, political, historic and economic factors that influence both the creation and content of films; and an analysis of the components of cinematography. May be repeated for credit.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and Artistic and Creative Expression Requirements.

**Prerequisites:** Any 300-level Spanish course or permission.

**Course Typically Offered:** Variable

Credits: 3

## **SPA 444 - Theory and Techniques of Translation**

Designed to develop awareness of linguistic styles and structures and emphasize the complex relationship between a language and its context. Taught as workshop, with regular assignments of texts for translation, comparison and evaluation. Selections from literature and general topics, although this is not a literature course. Attention given to theories of translation both past and present and how these theories respond to cultural and ideological perspectives; and relate to Spanish translation.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspective and Writing Intensive Requirements.

**Prerequisites:** SPA 306 or equivalent.

**Course Typically Offered:** Fall, Even Years

Credits: 3

## **SPA 490 - Topics and Individual Authors in Spanish**

Specific topic varies semester to semester. May be repeated for credit.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** Any 300-level Spanish course or permission of instructor.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1-3

### **SPA 495 - Senior Project in Spanish**

Capstone Experience in which majors in Spanish and in International Affairs with a concentration in Spanish, or in Cultures, Languages and the Humanities, apply language skills and knowledge gained from all prior language study. Students work closely with a faculty advisor on an approved project and give a public presentation of the project in Spanish. When taken as a stand-alone course, the coursework will reflect the work of three credit hours, regardless of number of credits taken. When taken in conjunction with another Spanish course at the 400 level, the course will carry no credit and will be graded Pass/Fail only.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives, Western Cultural Traditions and Capstone Experience Requirements.

**Prerequisites:** Senior standing and permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 0-3

### **SPA 496 - Service Learning in Spanish**

Experiential learning through community development using the Spanish language. Work done in collaboration with community partners. Classroom presentations, reflection essays, plus theoretical and pedagogical rationale for using service-learning format. Taught in Spanish. May be repeated once for credit with permission.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** SPA 305 or permission of instructor.

**Course Typically Offered:** Variable

Credits: 3

### **SPA 497 - Projects in Spanish I**

Independent study on topics selected by student and instructor.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Course Typically Offered:** Fall

Credits: 1-3

## **SPA 498 - Projects in Spanish II**

Independent study on topics selected by student and instructor.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** permission.

**Course Typically Offered:** Spring

Credits: 1-3

## **STS 215 - Introduction to Statistics for Business and Economics**

For students in the College of Business, Public Policy and Health and for others concentrating in business or economics. A limited introduction to probability theory leading to discussion of distributions of random variables, in particular the normal and binomial families; a brief treatment of descriptive methods; an introduction to inferential statistics, including one- and two-sample procedures for estimation of parameters and for hypothesis testing; fundamentals of regression analysis or contingency table analysis or contingency table analysis as time permits. NOTE: because of overlap, STS 232 and STS 215 cannot both be taken for degree credit.

**General Education Requirements:** Satisfies the General Education Quantitative Literacy Requirement.

**Prerequisites:** A grade of C or better in MAT 115.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

## **STS 232 - Principles of Statistical Inference**

Intended for students who will use statistics as an aid to the comprehension of quantitative work done by others and for students who will follow this course by an intermediate level applied statistics course. An introduction to the language and methods of statistical analysis, probability, graphic and numeric descriptive methods and inference from sample data. NOTE: because of overlap, MAT 232 and MAT 215 cannot both be taken for degree credit.

**General Education Requirements:** Satisfies the General Education Quantitative Literacy Requirement.

**Prerequisites:** Two years of high school math required.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **STS 332 - Statistics for Engineers**

Statistical methods applicable to engineering including theory and application of classical and nonparametric methods.

**Prerequisites:** A grade of C or better in MAT 228.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **STS 434 - Introduction to Statistics**

Topics include probability, random variables, continuous and discrete distributions, point and interval estimation, tests of hypotheses, linear regression and correlation, analysis of variance.

**Prerequisites:** A grade of C or better in MAT 228.

**Course Typically Offered:** Fall & Spring

Credits: 4

### **STS 436 - Nonparametric Statistics**

Surveys nonparametric alternatives to standard parametric techniques. Emphasis on situations in which the use of a parametric technique is incorrect or, at best, marginal.

**Prerequisites:** A grade of C or better in STS 434 or STS 437.

**Course Typically Offered:** Spring, Odd Years

Credits: 3

### **STS 437 - Statistical Methods in Research**

An introduction to analysis of variance and regression analysis using a unifying approach to theory; application and illustrations from many fields.

**Prerequisites:** A grade of C or better in STS 232 or STS 434 or Department permission.

**Course Typically Offered:** Fall

Credits: 3

## **SVT 100 - Introduction to Surveying Technology**

Discussion of the major topics in surveying engineering technology including field instrumentation, boundary surveying, topographic surveying, computer-aided drafting, route surveying, global positioning system and geodesy, map projections, photogrammetry, remote sensing, and geographic information systems. Will include lectures from practicing professionals in their respective disciplines. Lec 1.

**Course Typically Offered:** Fall

Credits: 1

## **SVT 102 - Surveying Principles for Civil Engineers**

The course is a study of surveying instruments, procedures and computations. The course will cover grade, cross-section, construction stakeout, horizontal curves, reverse curves, compound curves, area computations, volume computations, mapping, introduction to geographic information systems, and introduction to global positioning systems. Lec. 2 Lab 2

**Prerequisites:** None.

**Course Typically Offered:** Fall

Credits: 3

## **SVT 110 - Instrumentation and Data Collectors**

Instrumentation used in various aspects of surveying engineering technology and the systems that communicate with those systems (generically known as data collectors) will be discussed. Systems for processing, display, and presentation of results will also be demonstrated. Photogrammetric data collection will be examined as an alternative to direct field methods. Lec 1.

**Course Typically Offered:** Fall

Credits: 1

## **SVT 121 - AutoCAD for Surveyors I**

Provides an introduction to computer aided drafting and design using AutoCAD. Covers concepts, techniques and procedures of menu systems, drawing setup, coordinate systems, draw and modify commands, display control, creating and working with layers and file management. Also covers editing, viewing, dimensioning commands, paper space, xrefs, and attributes. Lec 2, Lab 2.

**Course Typically Offered:** Fall

Credits: 3

## **SVT 122 - AutoCAD for Surveyors II**

Using Autodesk Land Desktop 2006, Autodesk Survey 2006 and Civil 3D 2006 software, land surveying applications will be studied, including terrain modeling, surface boundaries, breaklines and contours; horizontal alignment and vertical alignment design; route surveying including road sections using templates; construction surveying including grading and volume calculations; downloading, creating, and analyzing survey data and performing data adjustments, and dynamic engineering models. Lec 2, Lab 2.

**Prerequisites:** SVT 121.

**Course Typically Offered:** Spring

Credits: 3

## **SVT 201 - Adjustment Computations**

Basic statistics as applied to surveying, error estimation, error propagation, basic matrix algebra, level network analysis, 3-D traverse analysis, GPS vector network analysis, combined traditional total station and GPS network analysis, blunder detection, positional tolerance, hypothesis testing. Lec 3.

**Prerequisites:** CET 202, MAT 215, TME 253 and SVT 110 or equivalent.

**Course Typically Offered:** Spring

Credits: 3

## **SVT 221 - Boundary Law**

Covers historical to present United States land title conveyancing, historical surveying procedures, colonial and pre-colonial land grants, the United States public land survey system, rules of construction and procedures for boundary retracement, recording systems, interpretation of property descriptions, and professional responsibility. Lec 3.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition and Writing Intensive



Requirements.

**Prerequisites:** CET 101 or FTY 208, or two years of surveying practice.

**Corequisites:** ENG 212

**Course Typically Offered:** Spring

Credits: 3

### **SVT 322 - Preparing Effective Property Descriptions**

Covers principles of interpretation, techniques and forms for descriptions and preparation of land descriptions. Layout, content, and display of plats and descriptions will be covered. Web-based. Lec 1.

**Prerequisites:** SVT 221; Prerequisite or Corequisite: SVT 122; or permission of instructor.

**Course Typically Offered:** Spring

Credits: 1

### **SVT 325 - Surveying/Engineering Ethics**

Introduces students to ethics theory, general concepts and principles pertaining to ethics and handling ethical situations in practice. Throughout the course, students will be presented with a combination of practical exercises, explanation and discussion narratives. Lec 0.

**General Education Requirements:** Satisfies the General Education Ethics Requirement.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1

### **SVT 326 - Record Research**

Covers the location of property records, general procedure for locating relevant records, differences between title and boundary research, overcoming typical problems in research, the preparation of title abstracts and research reports and the use and limitations of research. Throughout the course, students will be presented with a combination of practical exercises, explanation and discussion. Students who have taken SVT 221 cannot enroll in this course. Web-based. Lec 0.

**Course Typically Offered:** Not Regularly Offered

Credits: 1

## **SVT 329 - Site Planning and Subdivision Design**

Subdivision rules and regulations, creating lots of esthetic value, satisfying minimum lot requirements, acreage calculations, cul-de-sacs, integration of site features to optimum development, application of civil engineering principles to land development and land development software. Lec 1.

**Prerequisites:** CET 332, SVT 122 and SVT 322 or equivalent, or concurrently.

**Course Typically Offered:** Fall

Credits: 1

## **SVT 331 - Photogrammetry**

Includes procedures and methods used for deriving metric information from photographs, analog processes for using serial photographs in production of topographic maps, flight planning and cost estimation in aerial mapping work. Introduction to photo-coordinate measurement devices and their calibration.

**Prerequisites:** CET 101 and TME 152.

**Course Typically Offered:** Spring

Credits: 3

## **SVT 341 - Advanced Surveying**

Geodetic horizontal and vertical datums, plane projection systems, localization of projection coordinates, datum transformations, astronomic observations, cadastral surveying as applied to the U.S. Public Land Survey System, creation of survey products in a computer-aided drafting environment, engineering related photogrammetry (job planning, control aspects, map collection and processing, and image based products). Lec 3.

**Prerequisites:** CET 202 or equivalent.

**Course Typically Offered:** Fall

Credits: 3

## **SVT 352 - Practical Field Operations**

Making optimal use of a survey data collection system in creation of office survey products, building checks in survey collection, automated field techniques which create office linework, optimizing feature coding and descriptive abilities, deciding between use of GPS and optical survey devices for survey projects, optimization of stakeout and building checks in that process, surveying documentation and reporting. Lec 3.

**Prerequisites:** CET 202, ENG 317 or equivalent.

**Course Typically Offered:** Spring

Credits: 3

### **SVT 418 - Fundamentals of Surveying Exam Overview**

A review of all elements of the "day #1" nationwide element of the examination which leads to licensure as a professional land surveyor. Practice examinations on all topics covered in this exam. Lec 1.

**Prerequisites:** Junior standing or permission of instructor.

**Course Typically Offered:** Fall

Credits: 1

### **SVT 437 - Practical GPS**

Presentation of all types of GPS equipment with their uses and limitations, GPS observation planning based on satellite geometry and obstructions, review of geodetic coordinate systems and datums, the geoid and how it relates to the production of elevations from GPS, execution of all components (planning, field collection, downloading, processing, and adjustment) of a GPS survey where raw data is collected, real time kinematic (RTK) GPS field execution and adjustment for control work, use of RTK GPS in collection of a topographic survey. Lec 2, Lab 2.

**Prerequisites:** SVT 341 or equivalent.

**Course Typically Offered:** Fall

Credits: 3

### **SVT 475 - Small Business Management**

Provides a broad overview of the skills necessary to operate a small business. Focuses on teaching basic marketing, accounting and management skills with an emphasis on topics that impact the small business owner. Lec 3. (Fall.)

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **SVT 490 - Surveying Capstone**

A class project type course which integrates all components of previous surveying coursework and emphasizes working with others on a long term project; project description, project planning, field collection, office processing, computer-aided drafting, final product preparation, oral presentation of results. Lec 3.

**General Education Requirements:** Satisfies the General Education Capstone Experience Requirement.

**Prerequisites:** SVT 341, SVT 437, SVT 352 or equivalent.

**Course Typically Offered:** Spring

Credits: 3

### **SVT 498 - Selected Topics in Surveying Engineering Technology**

Topics that are not regularly covered in other courses. Content varies to suit individual needs. May be repeated for credit. (Fall and Spring.)

**Prerequisites:** junior or senior standing.

**Course Typically Offered:** Fall & Spring

Credits: Ar

### **SWK 101 - Opportunities for the Social Work Major**

Introduces first-year and transfer students who have declared a major in social work to the general resources of the University of Maine and to the specific resources of the School of Social Work. Topics include overview of library and computer facilities, degree and graduation requirements, volunteer opportunities, internships, and future career opportunities. (Pass/Fail Grade Only.)

**Prerequisites:** Social Work major.

**Course Typically Offered:** Fall

Credits: 1

## **SWK 320 - Introduction to Social Work**

Focuses on the history and development of social welfare and social work, the basic values and concepts of social work practice and the major fields of social work practice. Second semester students or sophomore level.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions Requirement.

**Prerequisites:** SOC 101 or permission.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **SWK 330 - Contemporary Issues in Diversity and Pluralism**

Examines plurality and diversity from a standpoint of difference created by culture, race, social structure, religious affiliation, gender, age, sexual orientation and ability. Issues of prejudice and discrimination examined on an individual and societal level.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** SOC 101.

**Course Typically Offered:** Spring

Credits: 3

## **SWK 350 - Human Behavior and the Social Environment I**

Examines normative development, behavior, values and attitudes as influenced by age, cohort, gender, culture, social class, social structures, oppression and other environmental factors. Addresses the life span and attendant concerns from multiple theoretical perspectives within a systems person-in-environment framework. Considers implications for social work practice and social welfare policy.

**Prerequisites:** PSY 100 and SOC 101 or permission.

**Course Typically Offered:** Fall & Summer

Credits: 3

## **SWK 351 - Human Behavior in the Social Environment II**

Examines research and traditional/alternative theories related to normative development of families, small groups and communities. Explores the impact of age, gender, social class, oppression and other environmental factors on that development. Examines the physical environment (nature and built), social structure and contexts of organizations and institutions in interaction with families, groups and communities. Considers implications for social work practice and social welfare policy.

**Prerequisites:** SWK 350 or permission.

**Course Typically Offered:** Spring

Credits: 3

### **SWK 361 - Generalist Social Work Practice I**

Explores the functions and roles of the social worker, the value base of social work practice, and the processes of providing service. Social Work majors only.

**Prerequisites:** SWK 350 or permission.

**Course Typically Offered:** Spring

Credits: 3

### **SWK 365 - Problems of Child Abuse and Neglect: A Multidisciplinary Approach**

Examines the roles of the major disciplines, agencies and professions involved in the prevention, early detection, assessment, intervention, treatment and management of child abuse and neglect. Focus on victims and their families. (Continuing Education Only.)

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions Requirement.

**Prerequisites:** SOC 101 or permission.

**Course Typically Offered:** Fall

Credits: 3

### **SWK 380 - The Biological Person and the Environment**

The biological person as viewed from a biopsychosocial-spiritual model requires that social workers develop an appreciation and understanding of the reciprocal impact of behavior and biology on one another. For social workers, understanding the biological systems means closely examining the human body and all of the intricate, interdependent systems and their actions that are necessary to maintain life.

**Course Typically Offered:** Fall & Summer

Credits: 3

### **SWK 395 - Beginning Field Experience in Social Work**

Preparation for field practicum, exploration of interest in professional social work and introduction to social welfare agency milieu through volunteer experience. Students must register for both fall and spring semesters.

**Prerequisites:** Social Work major or permission.

**Course Typically Offered:** Fall & Spring

Credits: 1 - 3

### **SWK 440 - Social Welfare Policy and Issues**

Provides an analytic perspective on the provision of social services and the interrelatedness of practice and policy analysis. The dimensions of choice in social welfare policy and major issues in provision of services are examined.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions and Writing Intensive Requirements.

**Prerequisites:** PAA 100 or PAA 220 or POS 100 and SWK 320 or permission.

**Course Typically Offered:** Spring

Credits: 3

### **SWK 462 - Generalist Social Work Practice II**

Develops knowledge, values and skills necessary for provision of social services to individuals, families and small groups. Includes knowledge and skill building in interpersonal communication, planning and carrying out interventions, and evaluating interventions within the context of generalist social work practice. Integrates classroom and field instruction experiences. Limited to senior social work majors.

**Prerequisites:** SWK 361.

**Course Typically Offered:** Fall

Credits: 3

### **SWK 463 - Generalist Social Work Practice III**

Explores the theory and practice of purposive social change in social agencies and communities, participation of social workers in politics, and social worker roles of advocate, resource mobilizer, program planner, and organizer. Integrates the classroom and field instruction experience. Limited to senior social work majors.

**Prerequisites:** SWK 462.

**Course Typically Offered:** Spring

Credits: 3

### **SWK 491 - Methods of Social Work Research**

Beginning methods of social work research. Strategies and methods of developing knowledge in the context of social work practice and social welfare. The place of theory in research, problem formulation, ethical concerns, research designs, including practice research and evaluation, methods of data collection, sampling, introduction to program evaluation, and basic procedures in data analysis and statistics.

**Course Typically Offered:** Fall

Credits: 3

### **SWK 495 - Field Practicum in Social Work**

Generalist social work practice in community agencies provides opportunities to apply social work knowledge and skills directed toward planned intervention and change efforts. Limited to social work majors who have completed at least 75 course credit hours. 12 credit hours of Field Practicum required, 6 per semester. Variable credit by permission.

**General Education Requirements:** Satisfies the General Education Capstone Experience Requirement.

**Prerequisites:** SWK 361 and SWK 440.

**Corequisites:** SWK 462 (fall semester) and SWK 463 (spring semester.)

**Course Typically Offered:** Fall & Spring

Credits: 1-6

### **SWK 497 - Special Topics in Social Work**

Content varies to suit needs of individual students or small groups. May be repeated for credit.



**Prerequisites:** permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 1-3

### **THE 111 - Introduction to Theatre**

A basic appreciation course for the general student as well as prospective theatre majors that explores the process of theatrical expression throughout history and its relationship to culture.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **THE 112 - Survey of Dramatic Literature**

Survey of drama from its early development up to the present as literature and as theatre. Stress on dramatic form and content and on the uniqueness of the drama to reflect the philosophical, social and political environment.

**General Education Requirements:** Satisfies the General Education Western Cultural Tradition Requirement.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **THE 117 - Fundamentals of Acting**

Focus on the basic skills of acting, including internal preparation for playing a role, character analysis, vocal and physical development and techniques for projecting to an audience.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **THE 118 - Stage Makeup**

Study of principles and techniques of stage makeup including practical application in class and production experience opportunities.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **THE 120 - Introduction to Stagecraft**

Designed to provide a foundation in the practice of technical theatre and preparation for work in scenery, lighting and sound. Emphasis is placed on procedures, practice and nomenclature. The required lab, that accompanies this course, provides hands-on experience, through special projects, designed to reinforce specific technical skills discussed and demonstrated in class.

**Corequisites:** THE 121

**Course Typically Offered:** Fall

Credits: 3

## **THE 121 - Introduction to Stagecraft Laboratory I**

Provides hands-on experience, through special projects, designed to reinforce specific technical skills discussed and demonstrated in THE 120.

**Corequisites:** THE 120

**Course Typically Offered:** Fall

Credits: 1

## **THE 122 - Introduction to Stagecraft Laboratory II**

Provides hands-on experience, through special projects, designed to reinforce specific technical skills discussed and demonstrated in THE 120.

**Prerequisites:** THE 120 and THE 121

**Course Typically Offered:** Fall

Credits: 1

## **THE 130 - Introduction to Costume Construction**

Basic processes of theatre costume construction. Includes measuring, building and fitting techniques, safety in the costume studio and fabric properties and selection. Skills are developed through construction of a personal project and participation in building costumes for productions.

**Corequisites:** THE 131

**Course Typically Offered:** Spring

Credits: 3

## **THE 131 - Introduction to Costume Construction Laboratory**

Laboratory in costume production work.

**Prerequisites:** Required for theatre majors.

**Corequisites:** THE 130

**Course Typically Offered:** Spring

Credits: 1

## **THE 200 - Design for Performance**

This course is a study of the theory and principles of designing light and space for performance. It takes an interdisciplinary view of design and includes lectures, demonstrations, and practical application of ideas, techniques, and methods used in designing many types of performance in the political, legal, business, religious, sporting, and artistic arenas.

**General Education Requirements:** Satisfies the Artistic and Creative Expression General Education Requirement.

**Course Typically Offered:** Fall

Credits: 3

## **THE 201 - Fundamentals of Characterization**

Designed to help student actors develop a methodology and technique for analyzing character and performing scenes from the modern theatre repertoire.

**Prerequisites:** THE 117 or permission.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **THE 202 - Script Analysis**

Examines modern literature written for the theatre. Because the literature will be presented from a production perspective, this course is oriented for use by actors, directors and designers. The objective is to stimulate greater clarity, logic, depth and imagination of interpretation and to develop more effective preparatory techniques.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **THE 216 - Play Production**

Covers the basic principles of stage directing including choosing and analyzing plays, scheduling rehearsals, blocking action, and determining stage business. The class culminates in a showcase of student-directed works. Consequently, this is a "hands-on" course, in which students get to choose, possibly write, cast work, with actors, and direct their own small stage production.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression Requirement.

**Prerequisites:** THE 117

**Course Typically Offered:** Fall

Credits: 3

### **THE 268 - Theatre Practicum, Technical**

Supervised experience in Theatre and Dance Division productions in the areas of stage managing, publicity, scenery, lighting, costumes and makeup. May be repeated for a maximum of six hours.

**Prerequisites:** Permission of instructor.

**Course Typically Offered:** Variable

Credits: 1-3

## **THE 269 - Theatre Practicum in Acting**

Laboratory work in acting. Credit assigned by agreement of advisor and show director, based on learning opportunities of role. May be repeated for a maximum of three hours.

**Prerequisites:** Permission of instructor.

**Course Typically Offered:** Variable

Credits: 1-3

## **THE 300 - Introduction to Performance Studies**

This course takes the broad spectrum approach to the study of performance, examining all of human behavior and events through a social-scientific approach that employs various means of cultural analyses. Through an intercultural, intergeneric, and interdisciplinary approach, all of human behavior is viewed as performance and the impulses and agendas behind it are examined on an individual as well as cultural level. Ultimately, this course focuses upon the many ways in which "performativity" is evident in human transactions in the arts, business, technology, politics, and religion. Lecture and discussion format.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives and Writing Intensive Requirements.

**Prerequisites:** Junior Standing or permission.

**Course Typically Offered:** Spring

Credits: 3

## **THE 310 - Topics in Theatre Technology**

An advanced study in specific areas of technical theatre. Subjects vary from year to year but may include lighting technology, sound, scenic painting and properties, costume pattern drafting, costume crafts or stage management. May be repeated for credit.

**Course Typically Offered:** Spring

Credits: 3

## **THE 311 - Drafting for the Theatre**

This class is designed as an introduction to theatrical drafting. Topics covered will include hand and computer drafting for scenery and lights. Students will gain the ability to communicate in the theatre through proper vocabulary and with an understanding of standardized drafting techniques. They will also have the ability to read, understand and work from draftings

and translate a design into a shop drafting.

**Prerequisites:** None.

**Course Typically Offered:** Alternate Years.

Credits: 3

## **THE 312 - Technical Direction**

This class is designed for students interested in technical theatre as a career. We will focus on the management side of technical theatre. Students will further the knowledge of technical theatre begun in THE 120, Stagecraft and learn how to complete the technical design process for a show and prepare that show to be built. In addition, students will gain the ability to identify the uses, methods and best materials for a job, learn to problem solve for technical theatre, and to understand the mindset of a Technical Director.

**Prerequisites:** None.

**Course Typically Offered:** Alternate Years.

Credits: 3

## **THE 313 - Stage Management**

This class is designed to provide a student with the fundamental knowledge to pursue stage management at the University of Maine and to understand the basic small group dynamics and diplomacy tactics necessary for a successful stage manager. Students will gain a practical working knowledge of theatre and its' relationship to stage management as well as a general understanding of what a stage manager does and why.

**Prerequisites:** None.

**Course Typically Offered:** Alternate Years

Credits: 3

## **THE 320 - Topics in Theatre Design**

Study of the theatre design process in a specific area, including costume, lighting, scenic or sound design. Encompasses research, drafting or drawing, script analysis, budgeting and organizational skills required to design in the specified field. May be repeated for credit.

**Prerequisites:** Permission of instructor.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **THE 321 - Lighting Design**

This course explores the principles and theory of elements related to theatrical lighting design. It includes demonstrations, and practical application of ideas, techniques and methods employed in the theatre production process.

**Prerequisites:** None.

**Course Typically Offered:** Alternate years

Credits: 3

### **THE 322 - Scene Painting**

This course explores the craft of the theatre scenic artist. It includes lectures, demonstrations, and practical application of ideas, techniques, and methods used to paint scenery for the stage. Properties of light, color, texture, and line will be discussed as well as techniques in antiquing, wood graining, and marbling.

**Course Typically Offered:** Alternate years

Credits: 3

### **THE 340 - Playwriting, Directing and Performing Laboratory**

Performing a matrix for playwriting, directing and performing, this lab class affords the student an opportunity to work on a wide variety of original projects. Each student will create a traditional script or a non-traditional performance piece that will be written, analyzed and rewritten. There will be regular "Readers Theatre" style presentations of the material by members of the class.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression and Writing Intensive Requirements.

**Prerequisites:** THE 116 and THE 117 and THE 202 or permission.

**Course Typically Offered:** Variable

Credits: 3

### **THE 400 - Voice and Speech for the Actor**

A studio course in the principles of voice production and speech for the stage. Focus is on the development of the actor's voice and speech through exercises that heighten awareness of breath, encourage freer expression and expand vocal range and clarity.

**Prerequisites:** THE 117 or permission.

**Course Typically Offered:** Fall

Credits: 3

## **THE 402 - Movement Training for Actors**

A studio course in movement training and development for actors. Focus is on the use of the elements of movement and laban's effort-shapes to explore text and its expression and to expand the movement vocabulary of the actor.

**Prerequisites:** THE 117 and two credits in DAN or permission.

**Course Typically Offered:** Spring

Credits: 3

## **THE 403 - Styles and Techniques of Comedy**

Concentrates on the nature of comedy and comedic character addressing challenges such as timing, movement and relationship from all sources of dramatic literature from verse to modern comedy, from absurdism to tragic comedy.

**Prerequisites:** THE 117, THE 301 or permission.

**Course Typically Offered:** Variable

Credits: 3

## **THE 415 - Capstone Experience in Theatre**

A synthesis of the major's knowledge in a selected area of interest within theatre or dance. Students develop a professional portfolio based on their cumulative experiences in Theatre or Dance while working with a faculty member. May include a research paper, design, direction, performance or choreography. Project must have been generated as part of a student's coursework or under the supervision of a faculty member. A final presentation of the Capstone project to Theatre/Dance faculty is required.

**General Education Requirements:** Satisfies the General Education Capstone Experience and Artistic and Creative Expression Requirements.

**Prerequisites:** Senior standing.



**Course Typically Offered:** Fall & Spring

Credits: 1

### **THE 460 - Theatre History**

The development of performance and its relation to culture, from the ancient world to contemporary theatre and performance, including Asian, and African theatre. Examines the evolution of styles and modes of production through the major theatrical figures, performance events and institutions of each period.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives and Writing Intensive Requirements.

**Prerequisites:** Junior or Senior Standing or permission

**Course Typically Offered:** Fall

Credits: 3

### **THE 466 - Stage Directing**

Studies the task of all aspects of the theatre production into an artistic unity with emphasis on theatre aesthetics. Provides practice in the directing of short plays, with particular attention to working with actors.

**Prerequisites:** THE 216.

**Course Typically Offered:** Spring

Credits: 3

### **THE 480 - Topics in Theatre**

Advanced study of selected topics in Theatre. Explores the particular approaches, thematic content or contemporary issues related to acting, performance theory, genre, directing, costume and make-up design, set and lighting design or other areas of technical theatre. Specific topics will vary from semester to semester. May be repeated for credit.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **THE 497 - Independent Study in Theatre I**

No description available.

**Prerequisites:** permission.

**Course Typically Offered:** Fall & Summer

Credits: 1-3

## **THE 498 - Independent Study in Theatre II**

No description available.

**Prerequisites:** permission.

**Course Typically Offered:** Spring, Summer

Credits: 1-3

## **TME 152 - Introductory Calculus for Engineering Technology**

This course presents a first semester introduction to Calculus with engineering examples. Topics include trigonometric identities and equations, limits and continuity, partial fractions and introductory calculus including the derivative and its applications. The developed math skills are used to analyze engineering problems.

**General Education Requirements:** Satisfies the General Education Quantitative Literacy Requirement.

**Prerequisites:** Engineering Technology majors and grade of C or better in MAT 122 or a minimum score of 10 on Section #3 of the Math Placement Exam.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **TME 253 - Applied Calculus for Engineering Technology**

This course presents a second semester of single-variable calculus. Topics include integration and its applications, derivatives of transcendental functions and a variety of integration techniques. Applications of these concepts to problems in science and engineering technology are stressed.

**Prerequisites:** Engineering Technology majors; Grade of "C" or better in TME 152 or equivalent.

**Course Typically Offered:** Fall & Spring

Credits: 4

### **TME 354 - Ordinary Differential Equations With Engineering Applications**

An introduction to linear and nonlinear ordinary differential equations, Laplace Transforms and their applications. Mathematical modeling of differential equations applicable to electrical and mechanical engineering and interpretation of the solutions are presented. A brief introduction to Fourier Series and partial differential equations is also included.

**Prerequisites:** Engineering Technology majors; Grade of "C" or better in TME 253 or equivalent.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **UST 100 - Introduction to the Bachelor of University Studies**

Introduces the student to the nature of higher education as a learning community. Particular emphasis given to academic resources, the learning process, academic skills, developmental advising and career counseling. Students participate in extensive reading and writing assignments relevant to their college transition and degree goals.

(Pass/Fail Grade Only.)

**Prerequisites:** Bachelor of University Studies major; others by permission.

**Course Typically Offered:** Fall & Spring

Credits: 1

### **UST 200 - Crucial Question 1. Defining Human: What does it mean to be human? : Who are we? How do we know?**

Starting with the analysis of where each student is, in terms of life experience, assumptions and ideas of what it means to be human, we move from the idea that a contemporary view of the world is "good" or "appropriate" or "normal, usual and universal", the student will be encouraged to develop critical thinking skills to discern, analyze and assess information from a variety of sources from across the globe and from different time periods that deal with the crucial question of what it means to be human. There are two components of the crucial question of "What does it mean to be human?" for each half of the semester: What does it mean to be human? How do we know?

**Prerequisites:** B.U.S. Students

**Course Typically Offered:** Fall.

Credits: 3

## **UST 210 - Crucial Question 2: Explorations & Encounters: What is the World (and how do we know it?)**

Starting with depictions and narratives of concepts of the world, this course investigates the way in which the experience of exploration and encounter impacts our ideas of what the world is and where we are in the world. In looking at the ways in which others have explored, perceived, and mapped the world, the student will be encouraged to develop critical thinking skills to discern, analyze and assess information from a variety of sources from across the globe and from different time periods. Interrogating assumptions and ideas of how we think about and define the world (and the environment, people, and creatures in it), we move from the idea that a contemporary view of the world is "good" or "appropriate" or "normal, usual, and universal." The course investigates two crucial, and related, questions: What is the world? How do we know it? And the final corollary, Does the way we view the world affect our actions within it?

**Prerequisites:** B.U.S. Students

**Course Typically Offered:** Spring

Credits: 3

## **UST 300 - Core Course in University Studies**

Provides understanding and insight into skills in critical thinking, analysis, and writing across disciplines. Emphasis on research analysis and integrative thinking.

**General Education Requirements:** Satisfies the General Education Writing Intensive Requirement.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **UST 310 - Crucial Questions 3: Self and Others**

The student is invited to consider his or her identity in the world as a place of relationship, with webs of responsibility to self, others, family, community, and the world. We consider not only relationships and the self in contemporary Western culture, but look at origins of our ideas of relationships, ethics, and morality, and other ways in other cultures of considering relationships and our responsibilities to ourselves and to others, including communities, society, and the world.

**Prerequisites:** B.U.S. Students.

**Course Typically Offered:** Alternate Years.

Credits: 3

## **UST 320 - Crucial Questions 4: Human Futures**

Crucial Questions 4. Human Futures considers possible futures of humanity, based on different types of knowledge or "ways of knowing". Going across time and considering selected cultures and groups, we consider how the questions we ask and the assumptions we bring to bear determine the outcomes we project. How do we know what we know? Whence does that knowledge arise? What is our responsibility to act once we have awareness and understanding to ourselves, to our communities and society, to the world of the future?

**Prerequisites:** B.U.S. Students

**Course Typically Offered:** Alternate Years

Credits: 3

## **UST 400 - Advance Topics in University Studies**

This independent study course allows students enrolled in the Bachelor of University Studies Program to focus more deeply in an area of their choice. May be repeated for credit.

**Prerequisites:** Bachelor of University Studies Majors and permission.

**Course Typically Offered:** Variable

Credits: 1-6.

## **UST 499 - Senior Capstone**

Interdisciplinary senior research project. Senior students will use their areas of foci to build on their knowledge and apply it to a specific senior project or internship. Students will integrate program knowledge and demonstrate synthesis, analysis and critical evaluation of their specific project.

**General Education Requirements:** Satisfies the General Education Capstone Experience Requirement.

**Prerequisites:** senior standing, Bachelor of University Studies major.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **VOX 100 - Beginning Spoken Arabic I**

Beginning Arabic language study using a combination of self-instruction and recitation. Class is taught by native speakers in the

target language, and includes a high degree of cultural engagement.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** Permission of Coordinator of Critical Language Program.

**Course Typically Offered:** Variable

Credits: 3

## **VOX 101 - Beginning Spoken Chinese I**

Beginning Chinese language study using a combination of self-instruction and recitation. Class is taught by native speakers in the target language, and includes a high degree of cultural engagement.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** Permission of Coordinator of Critical Language Program.

**Course Typically Offered:** Variable

Credits: 3

## **VOX 102 - Beginning Spoken Farsi I**

Beginning Farsi language study using a combination of self-instruction and recitation. Class is taught by native speakers in the target language, and includes a high degree of cultural engagement.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** Permission of Coordinator of Critical Language Program.

**Course Typically Offered:** Variable

Credits: 3

## **VOX 103 - Beginning Spoken Hebrew I**

Beginning Hebrew language study using a combination of self-instruction and recitation. Class is taught by native speakers in the target language, and includes a high degree of cultural engagement.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** Permission of Coordinator of Critical Language Program.

**Course Typically Offered:** Variable

Credits: 3

## **VOX 104 - Beginning Spoken Hindi I**

Beginning Hindi language study using a combination of self-instruction and recitation. Class is taught by native speakers in the target language, and includes a high degree of cultural engagement.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** Permission of Coordinator of Critical Language Program.

**Course Typically Offered:** Variable

Credits: 3

## **VOX 105 - Beginning Spoken Irish Gaelic I**

Beginning Irish Gaelic language study using a combination of self-instruction and recitation. Class is taught by native speakers in the target language, and includes a high degree of cultural engagement.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** Permission of Coordinator of Critical Language Program.

**Course Typically Offered:** Variable

Credits: 3

## **VOX 106 - Beginning Spoken Italian I**

Beginning Italian language study using a combination of self-instruction and recitation. Class is taught by native speakers in the target language, and includes a high degree of cultural engagement.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** Permission of Coordinator of Critical Language Program.

**Course Typically Offered:** Variable

Credits: 3

## **VOX 107 - Beginning Spoken Japanese I**

Beginning Japanese language study using a combination of self-instruction and recitation. Class is taught by native speakers in the target language, and includes a high degree of cultural engagement.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** Permission of Coordinator of Critical Language Program.

**Course Typically Offered:** Variable

Credits: 3

## **VOX 108 - Beginning Spoken Korean I**

Beginning Korean language study using a combination of self-instruction and recitation. Class is taught by native speakers in the target language, and includes a high degree of cultural engagement.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** Permission of Coordinator of Critical Language Program.

**Course Typically Offered:** Variable

Credits: 3

## **VOX 109 - Beginning Spoken Portuguese I**

Beginning Portuguese language study using a combination of self-instruction and recitation. Class is taught by native speakers in the target language, and includes a high degree of cultural engagement.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** Permission of Coordinator of Critical Language Program.



**Course Typically Offered:** Variable

Credits: 3

### **VOX 110 - Beginning Spoken Russian I**

Beginning Russian language study using a combination of self-instruction and recitation. Class is taught by native speakers in the target language, and includes a high degree of cultural engagement.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** Permission of Coordinator of Critical Language Program.

**Course Typically Offered:** Variable

Credits: 3

### **VOX 111 - Beginning Spoken Turkish I**

Beginning Turkish language study using a combination of self-instruction and recitation. Class is taught by native speakers in the target language, and includes a high degree of cultural engagement.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** Permission of Coordinator of Critical Language Program.

**Course Typically Offered:** Variable

Credits: 3

### **VOX 130 - Beginning Spoken Arabic II**

Beginning Arabic language study using a combination of self-instruction and recitation. Class is taught by native speakers, and includes a high degree of cultural engagement.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** VOX 100 and Permission of Coordinator of Critical Language Program.

**Course Typically Offered:** Variable

Credits: 3

### **VOX 131 - Beginning Spoken Chinese II**

Beginning Chinese language study using a combination of self-instruction and recitation. Class is taught by native speakers, and includes a high degree of cultural engagement.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** VOX 101 and Permission of Coordinator of Critical Language Program.

**Course Typically Offered:** Variable

Credits: 3

### **VOX 132 - Beginning Spoken Farsi II**

Beginning Farsi language study using a combination of self-instruction and recitation. Class is taught by native speakers, and includes a high degree of cultural engagement.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** VOX 102 and Permission of Coordinator of Critical Language Program.

**Course Typically Offered:** Variable

Credits: 3

### **VOX 133 - Beginning Spoken Hebrew II**

Beginning Hebrew language study using a combination of self-instruction and recitation. Class is taught by native speakers, and includes a high degree of cultural engagement.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** VOX 103 and Permission of Coordinator of Critical Language Program.

**Course Typically Offered:** Variable

Credits: 3

## **VOX 134 - Beginning Spoken Hindi II**

Beginning Hindi language study using a combination of self-instruction and recitation. Class is taught by native speakers, and includes a high degree of cultural engagement.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** VOX 104 and Permission of Coordinator of Critical Language Program.

**Course Typically Offered:** Variable

Credits: 3

## **VOX 135 - Beginning Spoken Irish Gaelic II**

Beginning Irish Gaelic language study using a combination of self-instruction and recitation. Class is taught by native speakers, and includes a high degree of cultural engagement.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** VOX 105 and Permission of Coordinator of Critical Language Program.

**Course Typically Offered:** Variable

Credits: 3

## **VOX 136 - Beginning Spoken Italian II**

Beginning Italian language study using a combination of self-instruction and recitation. Class is taught by native speakers, and includes a high degree of cultural engagement.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** VOX 106 and Permission of Coordinator of Critical Language Program.

**Course Typically Offered:** Variable

Credits: 3

## **VOX 137 - Beginning Spoken Japanese II**

Beginning Japanese language study using a combination of self-instruction and recitation. Class is taught by native speakers, and includes a high degree of cultural engagement.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** VOX 107 and Permission of Coordinator of Critical Language Program.

**Course Typically Offered:** Variable

Credits: 3

## **VOX 138 - Beginning Spoken Korean II**

Beginning Korean language study using a combination of self-instruction and recitation. Class is taught by native speakers, and includes a high degree of cultural engagement.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** VOX 108 and Permission of Coordinator of Critical Language Program.

**Course Typically Offered:** Variable

Credits: 3

## **VOX 139 - Beginning Spoken Portuguese II**

Beginning Portuguese language study using a combination of self-instruction and recitation. Class is taught by native speakers, and includes a high degree of cultural engagement.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** VOX 109 and Permission of Coordinator of Critical Language Program.

**Course Typically Offered:** Variable

Credits: 3

## **VOX 140 - Beginning Spoken Russian II**

Beginning Russian language study using a combination of self-instruction and recitation. Class is taught by native speakers, and includes a high degree of cultural engagement.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** VOX 110 and Permission of Coordinator of Critical Language Program.

**Course Typically Offered:** Variable

Credits: 3

### **VOX 141 - Beginning Spoken Turkish II**

Beginning Turkish language study using a combination of self-instruction and recitation. Class is taught by native speakers, and includes a high degree of cultural engagement.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** VOX 111 and Permission of Coordinator of Critical Language Program.

**Course Typically Offered:** Variable

Credits: 3

### **VOX 160 - Beginning Spoken Arabic III**

Beginning Arabic language study using a combination of self-instruction and recitation. Class focuses on oral communication and is taught by a native speaker. Includes a high degree of cultural engagement.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** VOX 130 or equivalent and permission of Critical Languages Coordinator

**Course Typically Offered:** Variable

Credits: 3

### **VOX 161 - Beginning Spoken Chinese III**

Beginning Chinese language study using a combination of self-instruction and recitation. Class focuses on oral communication

and is taught by a native speaker. Includes a high degree of cultural engagement.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** VOX 131

**Course Typically Offered:** Variable

Credits: 3

### **VOX 167 - Beginning Spoken Japanese III**

Beginning Japanese language study using a combination of self-instruction and recitation. Class focuses on oral communication and is taught by a native speaker. Includes a high degree of cultural engagement.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** VOX 137

**Course Typically Offered:** Variable

Credits: 3

### **VOX 168 - Beginning Spoken Korean III**

Beginning Korean language study using a combination of self-instruction and recitation. Class focuses on oral communication and is taught by a native speaker. Includes a high degree of cultural engagement.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** VOX 138 or equivalent and permission of Critical Languages Coordinator

**Course Typically Offered:** Variable

Credits: 3

### **VOX 190 - Critical Languages (Other)**

Specific topics determined by current interests of students and staff. May be repeated for credit if different topic is taken.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives

Requirement.

**Prerequisites:** Permission of Critical Languages Coordinator.

**Course Typically Offered:** Variable

Credits: 3

## **VOX 205 - Intermediate Spoken Irish Gaelic I**

Intermediate Irish Gaelic language study using a combination of self-instruction and recitation. Class focuses on oral communication and is taught by a native speaker. Includes a high degree of cultural engagement.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** VOX 135 and Permission

Credits: 3

## **VOX 206 - Intermediate Spoken Italian I**

Intermediate Italian language study using a combination of self-instruction and recitation. Class focuses on oral communication and is taught by a native speaker. Includes a high degree of cultural engagement.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** VOX 136 and permission of Critical Languages Coordinator

**Course Typically Offered:** Variable

Credits: 3

## **VOX 207 - Intermediate Spoken Japanese I**

Intermediate Japanese language study using a combination of self-instruction and recitation. Class focuses on oral communication and is taught by a native speaker. Includes a high degree of cultural engagement.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** VOX 137 and Permission

Credits: 3

### **VOX 208 - Intermediate Spoken Korean I**

Intermediate Korean language study using a combination of self-instruction and recitation. Class focuses on oral communication and is taught by a native speaker. Includes a high degree of cultural engagement.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** VOX 168 and Permission

Credits: 3

### **VOX 209 - Intermediate Spoken Portuguese I**

Intermediate Portuguese language study using a combination of self-instruction and recitation. Class focuses on oral communication and is taught by a native speaker. Includes a high degree of cultural engagement.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** VOX 139 and permission of Critical Languages Coordinator.

**Course Typically Offered:** Variable

Credits: 3

### **VOX 210 - Intermediate Spoken Russian I**

Intermediate Russian language study using a combination of self-instruction and recitation. Class focuses on oral communication and is taught by a native speaker. Includes a high degree of cultural engagement.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** VOX 140 and permission of Critical Languages Coordinator.

**Course Typically Offered:** Variable

Credits: 3



## **VOX 240 - Intermediate Spoken Russian II**

Intermediate Russian language study using a combination of self-instruction and recitation. Class focuses on oral communication and is taught by a native speaker. Includes a high degree of cultural engagement.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** VOX 210 and Permission

Credits: 3

## **VOX 270 - Intermediate Spoken Russian III**

Intermediate Russian language study using a combination of self-instruction and recitation. Class focuses on oral communication and is taught by a native speaker. Includes a high degree of cultural engagement.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** VOX 240 and Permission

Credits: 3

## **VOX 290 - Intermediate Critical Languages (Other)**

Specific languages determined by current interests of students and staff. May be repeated for credit if taking a higher level of the same language or a different language.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** Permission

Credits: 3

## **WGS 101 - Women's, Gender and Sexuality Studies**

An introduction to Women's, Gender and Sexuality Studies and to its perspectives. The course will use interdisciplinary perspectives to begin to examine the categories of gender and sexuality, grounded in Women's Studies, as they intersect with race, ethnicity, class, nationality, dis/ability and other sites of social inequality.

**General Education Requirements:** Satisfies the General Education Ethics, Social Contexts and Institutions, and Cultural Diversity and International Perspectives Requirements.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **WGS 103 - Introduction to Lesbian, Gay, Bisexual, and Transgender Studies**

Introduces the major perspectives and issues in lesbian, gay, bisexual and transgender studies, including histories and institutions, identities and representations, and cultures and subcultures.

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions, and Cultural Diversity and International Perspectives Requirements.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **WGS 201 - Topics in Women's, Gender, and Sexuality Studies**

An interdisciplinary, second-level study of topics such as "Women in the Hispanic World", "Men and Masculinities in Society" or "Lesbian Literature". May be taken more than once for credit if the topic differs.

**Prerequisites:** WGS 101 or permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **WGS 230 - Women, Health, and the Environment**

Examines the roles of women in shaping current practices and policies of the Western health care system and related environmental issues. It will draw on the work of Rachel Carson and modern women healers of the body and the ecosystem. Students are encouraged to be involved in transformational work at the local, personal or more global level.

**General Education Requirements:** Satisfies the General Education Ethics and Population and the Environment Requirements.

**Prerequisites:** WGS 101 or permission.

**Course Typically Offered:** Fall & Spring

Credits: 3

## **WGS 235 - Franco American Women's Experience**

Examines the immigration experience and subsequent lifestyles of the present-day Franco American woman and her cultural ancestors. Studying the immigration of these women from France to New France, Canada and across the border into the U.S., class participants will learn about the historical and cultural implications of immigration for these women and the definition they imparted to the culture. (This course is identical to FAS 230.)

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Prerequisites:** FAS 101 or WGS 101 or permission.

**Course Typically Offered:** Variable

Credits: 3

## **WGS 250 - Women and Music**

Explores the contributions and roles of women as composers, performers, teachers, conductors and patrons in Western Art music, non-Western art music and popular music. A wide spectrum of musical compositions by women in various styles will be studied, through recordings and live performances.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression, and Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** WGS 101 or permission.

**Course Typically Offered:** Fall

Credits: 3

## **WGS 270 - Native American Women**

This course is an exploration of the American Indian woman's lifestyles and social roles from a variety of tribal cultures. It will focus on the traditional and contemporary values and roles of American Indian women. This course will explore the history of the lives of American Indian women from a variety of tribes. (WGS 270 and NAS 270 are identical courses.)

**General Education Requirements:** Satisfies the General Edition Social Context and Institutions and Cultural Diversity and International Perspectives requirements.

**Prerequisites:** NAS 101 or WGS 101, or permission.

**Course Typically Offered:** Fall

Credits: 3

### **WGS 298 - Directed Study in Women's Studies**

Individual study, research, field experience and writing projects in Women's, Gender, and Sexuality Studies and related areas, conducted under the guidance of a faculty member associated with the Women's, Gender, and Sexuality Studies Program, arranged on request. (Contact the program office for an information sheet.)

**Prerequisites:** WGS 101 and Permission.

**Course Typically Offered:** Variable

Credits: Ar

### **WGS 301 - Intermediate Topics in Women's, Gender, and Sexuality Studies**

An interdisciplinary, intermediate level study of topics such as "Women and the Legal System" or "Gender and the History of Psychiatry". May be taken more than once if the topics differ.

**Prerequisites:** Sophomore standing; WGS101 or permission.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **WGS 340 - Transnational Feminisms**

Constraints of geography on social and cultural arrangements are receding, a process with implications for the world's women. Diverse transnational feminists provide different lenses on women's work in factories, immigration, sex tourism, etc.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives Requirement.

**Course Typically Offered:**  
Spring

Credits: 3

### **WGS 360 - Feminism and Cinema**

Surveys the involvement of women in cinema by looking at representations of women as well as representations by women. Introduces students to major developments in feminist film theory since its emergence in the 1970's.

**General Education Requirements:** Satisfies the General Education Artistic and Creative Expression, and Cultural Diversity and International Perspectives Requirements.

**Prerequisites:** WGS 101 or permission.

**Course Typically Offered:** Fall & Spring

Credits: 3

### **WGS 371 - Immigration, Women and Society**

Examines the varied and complex experiences of immigrant men and women in the United States. Students will learn about the history of U.S. immigration in general and about the gendered experiences of immigrants in particular. Immigrant experiences will be examined through a lens that views gender as a social system that intersects with other social structures including race, religion, and social class. A central feature of this course is a service-learning oral history project which requires students to interview an immigrant who has immigrated to the United States, incorporate the interviewee's experiences into an analytical paper, and present the findings at the end of the semester. This course is identical to SOC 371.

**General Education Requirements:** Satisfies the General Education Cultural Diversity and International Perspectives and Population and the Environment Requirements.

**Prerequisites:** WGS 101 and SOC 101, or permission.

**Course Typically Offered:** Variable

Credits: 3

### **WGS 401 - Advanced Topics in Women's, Gender, and Sexuality Studies**

An advanced, interdisciplinary study of topics such as "Interpersonal Violence" or "Global Feminism". May be taken more than once if the topics differ.

**Prerequisites:** Prerequisite: Junior standing and WGS 101

**Course Typically Offered:** Fall, Spring, Summer

Credits: 3

### **WGS 410 - Feminist, Gender and Queer Theory**

An advanced, interdisciplinary, multicultural introduction to the main traditions of feminist, gender and queer theory.

**General Education Requirements:** Satisfies the General Education Ethics Requirement.

**Prerequisites:** 6 hours of Women's Studies, including WGS 101 or permission.

**Course Typically Offered:** Fall

Credits: 3

### **WGS 451 - Women's Sexuality**

This class explores the nature of women's sexualities from a developmental perspective, with the intent of enhancing student's understanding of how women's sexuality is shaped, changed, and expressed throughout life: childhood and adolescence; young adulthood; middle adulthood and later life. Moving beyond the traditional focus on sexual functioning, this course emphasizes the complex interaction of psychological, social, cultural, and biological influences on the creation of sexual meanings for women. Students cannot receive credit for WGS 451 after passing WGS/WST 401 with a topic of Women's Sexuality.

**General Education Requirements:** Satisfies the General Education Social Context and Institutions requirement

**Prerequisites:** WGS 101 & Jr or Sr Standing

**Course Typically Offered:** Spring

Credits: 3

### **WGS 480 - Senior Seminar in Women's, Gender, and Sexuality Studies**

This integrated, interdisciplinary, and multicultural course provides advanced study of a specific topic in Women's, Gender, and Sexuality Studies, such as "Ecofeminism", "Sexuality and the Law" or "Women and Gender in Education".

**General Education Requirements:** Satisfies the General Education Social Contexts and Institutions, Cultural Diversity and International Perspectives, Writing Intensive, and Capstone Experience Requirements.

**Prerequisites:** WGS 101, WGS 410 and senior standing or permission.

**Course Typically Offered:** Spring

Credits: 3

### **WGS 498 - Directed Study in Women's, Gender, and Sexuality Studies**

Advanced, individual study, field experience, research and writing projects in Women's, Gender, and Sexuality Studies and

related areas, conducted under the guidance of a faculty member associated with the Women's, Gender, and Sexuality Studies Program, arranged on request. (Contact the program office for an information sheet.)

**Prerequisites:** WST 101; junior or senior standing and permission.

**Course Typically Offered:** Fall & Spring

Credits: Ar

## **WLE 100 - Introduction to Wildlife Resources**

A seminar introducing the opportunities, concerns, and professional responsibilities of the wildlife profession. Intended for first-year and transfer students interested in wildlife management. Lec 1. Course will include field trips during class hours and on weekends.

(Pass/Fail Grade Only.)

**Prerequisites:** Wildlife Ecology major or permission

**Course Typically Offered:** Fall

Credits: 1

## **WLE 150 - Wildlife Field Trip**

A one-week field course to introduce wildlife ecology students to various aspects of fish and wildlife management.

(Pass/Fail Grade Only.)

**Prerequisites:** WLE 100; first-year Wildlife Ecology major.

**Course Typically Offered:** Spring

Credits: 1

## **WLE 200 - Ecology**

The relationships between living organisms and their environment. The ecosystem, ecological factors, succession, community distribution, populations and the role of ecology in natural resources. Note: Because of overlapping subject matter, this course is not open to students who have taken BIO 319 or SMS 300.

**General Education Requirements:** Satisfies the General Education Applications of Scientific Knowledge requirement when taken without WLE 201. Together with WLE 201, this course satisfies the General Education Lab in the Basic or Applied Sciences requirement.

**Prerequisites:** NSFA majors only with sophomore standing and BIO 100.

**Course Typically Offered:** Fall

Credits: 3

### **WLE 201 - Ecology Laboratory**

A course emphasizing field and laboratory studies of plants and animals and their environments. A diversity of organisms and ecosystems will be investigated.

**General Education Requirements:** Together with WLE 200, this course Satisfies the General Education Lab in the Basic or Applied Sciences Requirement. WLE 201 alone satisfies the General Education Writing Intensive Requirement.

**Prerequisites:** Wildlife Ecology major or permission; an ecology lecture course (i.e. WLE 200) may be taken concurrently.

**Course Typically Offered:** Fall

Credits: 3

### **WLE 220 - Introduction to Ecological Statistics**

An introduction to the use of quantitative statistical methods for the purpose of answering ecological questions that provides information and techniques useful for advanced courses in wildlife ecology and other environmental sciences, with emphasis on presenting and interpreting results verbally and in writing.

**General Education Requirements:** Satisfies the General Education Mathematics Requirement.

**Prerequisites:** Prerequisites: Sophomore standing, a minimum grade of C- in WLE 200 or SMS 300 or BIO 319, AND a minimum grade of C in MAT 122 or C- in MAT 126.

**Course Typically Offered:** Spring

Credits: 4

### **WLE 230 - Introduction to Wildlife Conservation**

Basic principles of wildlife ecology and conservation are illustrated with examples from Maine and around the world.

**General Education Requirements:** Satisfies the General Education Population and the Environment Requirement.

**Course Typically Offered:** Spring

Credits: 3



## **WLE 250 - Wildlife Field Survey**

Two week field course stressing the use and application of wildlife research and management techniques, collection and analysis of biological data and the recognition of wildlife species and their habitats.

**Prerequisites:** WLE 100, WLE 200, WLE 201. Wildlife Ecology major.

**Course Typically Offered:** Summer

Credits: 3

## **WLE 323 - Introduction to Conservation Biology**

Maintaining the diversity of life forms in the face of environmental degradation involves the study of population ecology, population genetics, and ecosystem ecology plus the socioeconomic and political matrix in which conservation problems must be solved. Class ends before Thanksgiving. Required attendance for one or two Saturday sessions.

**General Education Requirements:** Satisfies the General Education Population and the Environment Requirement.

**Prerequisites:** BIO 100.

**Course Typically Offered:** Fall

Credits: 3

## **WLE 340 - Freshwater Fisheries Ecology and Management**

An ecological approach in studying freshwater fisheries and evaluating management tactics. Topics include general fish ecology, population dynamics, bioenergetics, stock-recruitment, habitat quality, biotic interactions, anthropogenic effects, recreational fisheries, management tools, assessment methods, nongame species, and human dimensions. Field-intensive, with emphasis on Maine fisheries and interaction with fishery professionals.

**Prerequisites:** BIO 329 and BIO 319 or FES 407 or SMS 300 or WLE 200.

**Course Typically Offered:** Fall, Odd Years

Credits: 3

## **WLE 341 - Freshwater Fisheries Laboratory**

If taken with WLE 340, will be considered a Field Intensive course in WLE curriculum and will satisfy a requirement for WLE's Fisheries Concentration.

**Prerequisites:** WLE 340 or concurrently

**Course Typically Offered:** Fall, Odd Years

Credits: 1

## **WLE 410 - Wildlife Population Dynamics and Conservation**

Characteristics of wildlife populations, including principles of population dynamics and population interactions, with application in wildlife population conservation. Lec 3.

**Prerequisites:**  
WLE 200 or SMS 300 or BIO 319, or permission.

**Course Typically Offered:** Fall

Credits: 3

## **WLE 411 - Wildlife Population Dynamics Lab**

Focuses on field and quantitative techniques used to evaluate components of wildlife population ecology. Students will gain experience in methods commonly used to estimate animal occupancy, abundance, survival, reproduction, and rate of population growth through time. Students will collect data in the field, analyze data in a computer laboratory setting, and interpret and present results in formal reports and presentations. Course may have field trips during class times.

**Corequisites:** WLE 410

**Course Typically Offered:** Fall

Credits: 1

## **WLE 413 - Wetland Delineation and Mapping**

Focuses on delineating and mapping wetlands using procedures accepted by the Army Corps of Engineers and the State of Maine. Students will learn to identify wetland boundaries using the 3-parameter approach; soils, vegetation and hydrology, currently required by federal and state laws regulating wetlands. Lec 3, Lab 3.

**General Education Requirements:** Satisfies the General Education Applications of Scientific Knowledge Requirement.

**Prerequisites:** BIO 319 or FES 407 or SMS 300 or SMS 352 or WLE 200 and PSE 140 or permission.

**Course Typically Offered:** Fall, Odd Years

Credits: 4

## **WLE 423 - Wetland Ecology and Conservation**

Focuses on major concepts in wetland ecology, classification, policy and regulation and issues in wetland conservation. Lecture material focuses on wetland communities associated with hydric soils (forested, shrub and emergent ecosystems). Lecture and field studies. Lec 3, Lab 3. (Fall - even.)

**General Education Requirements:** Satisfies the General Education Lab in the Basic or Applied Sciences Requirement.

**Prerequisites:** WLE 200 or equivalent or permission.

**Course Typically Offered:** Fall, Even Years

Credits: 4

## **WLE 435 - Field Experience**

A field experience in wildlife is a professional activity participated in by students under the supervision of a practicing professional in the field. A high degree of responsibility is placed on the student for developing learning objectives and securing the approval of a faculty member for academic credit for the learning involved in the experience. It may be paid or unpaid, it may last any length of time, and it may be repeated.

**Prerequisites:** Permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: Ar

## **WLE 440 - Undergraduate Wildlife Seminar**

Current topics of interest will be explored in a seminar format. Course may be repeated for credit.

**Prerequisites:** Wildlife Ecology major or permission; junior standing.

**Course Typically Offered:** Not Regularly Offered

Credits: 1-12

## **WLE 445 - Management of Endangered and Threatened Species**

An advanced course in threatened and endangered plant and animal species management that will investigate modern solutions to the problem. Emphasis will be on the biological and political aspects of endangerment and will emphasize involvement in the recovery process, using the U.S. Endangered Species Act as a basis. Lectures, discussion and a required research project that will involve students working as teams to revise and present recovery plans for endangered plant or animal species. NOTE: WLE 445 and WLE 545 cannot both be taken for credit. (Alternate years - odd.)

**Prerequisites:** Senior Standing; BIO 319 or SMS 300 or WLE 200 and WLE 410 or equivalent or permission.

**Course Typically Offered:** Spring, Odd Years

Credits: 3

## **WLE 450 - Wildlife-Habitat Relationships**

A study of the interrelationships among wildlife species and their habitats stressing application to conservation of biological diversity and management of harvested species. Focuses on a review and critique of habitat objectives, an assessment of habitat components, a discussion of the influence of spatial scales and landscape pattern on habitat quality, a survey of procedures for evaluating habitat quality, a synopsis of inter-specific interactions as they influence habitat relationships, and discussions of the influence of natural and human-caused disturbances on habitat. Lec 3. Course will include field trips on weekends.

**General Education Requirements:** Together with WLE 455, this course satisfies the General Education Capstone Experience requirement.

**Prerequisites:** WLE 250 and WLE 410 or permission.

**Corequisites:** WLE 455

**Course Typically Offered:** Spring

Credits: 3

## **WLE 455 - Wildlife-Habitat Evaluation**

Focuses on field, analytical and laboratory techniques for evaluating habitat for wildlife. Students will be introduced to the applied approaches and techniques for evaluating habitats. Material is presented via lectures, reading, fieldwork and laboratory experience. Lab 4.

**General Education Requirements:** Satisfies the General Education Writing Intensive requirement. Together with WLE 450, this course also satisfies the General Education Capstone Experience requirement.

**Prerequisites:** WLE 250, WLE 410 or permission.

**Corequisites:** WLE 450

**Course Typically Offered:** Spring

Credits: 2

## **WLE 461 - Human Dimensions of Fisheries and Wildlife Conservation**

This course is a mix of lectures, invited presentations, hands-on group activities, and peer to peer exercises that provide students with the theoretical knowledge and practical skills necessary to effectively engage and communicate with diverse stakeholders in collaborative management. The course covers such topics as governance of wildlife, sense of place and community, trust and capacity development, wildlife management as a systems process, collective behavior, engagement of stakeholders, collaborative planning and decision-making, adaptive management and adaptive impact management, identity-based conflict resolution, communication planning, and human dimensions research methodology. Participating in one Saturday or Sunday workshop (TBD) is required. Course may have field trips during class times.

**Prerequisites:** Junior, Senior or Graduate Standing

**Course Typically Offered:** Fall

Credits: 3

## **WLE 470 - Wildlife Policy and Administration**

Development and state and federal wildlife policy in the United States. Procedures for establishing and implementing policy and current policy issues. Rec 3. Course may have field trips during class times.

**Prerequisites:** Junior Standing or permission.

**Course Typically Offered:** Fall

Credits: 3

## **WLE 490 - Special Problems**

Original investigation in wildlife work, the subject to be chosen after consultation with the staff.

**Prerequisites:** Junior standing and a 3.0 GPA or higher and permission.

**Course Typically Offered:** Fall, Spring, Summer

Credits: Ar

# Enrollment Status

## Full-time Status

Full-time undergraduate students can be registered for sufficient credits each semester to complete their academic programs in four years (eight regular semesters). For most programs, this means students must average 15 credits per semester to earn the minimum of 120 credits required for graduation. Some programs require more than 120 credits.

The University treats undergraduate students registered for 12 or more credits as full-time students for purposes of calculating student financial aid, determining eligibility for campus housing, athletic eligibility, veteran's benefits, student fees, and for all other activities which vary according to enrollment status. Failure to register for at least 12 credits per semester will jeopardize eligibility in the above mentioned areas. Classes taken with an Audit status (no grade or credit hours earned) are not counted when determining enrollment status. Students who will be less than full time and are receiving financial aid should report a "change in enrollment plans" when accepting their financial aid through MaineStreet's Student Self-Service. The Office of Student Financial Aid will receive this information and if required will update the financial aid award. If the award is adjusted the student will receive an email notification.

For the spring semester students are encouraged to update the enrollment status in November. Failure to report a change in enrollment plans may result in a delay in receiving an expected refund when financial aid is disbursed.

The University grants exceptions to the full-time status under the following conditions (these exceptions do not apply to financial aid):

- Students who formally register in courses in select Cooperative Education, Field Experience, or Internships as part of their UMaine programs.
- Graduating seniors who need less than 12 credits to complete requirements and have applied to graduate.

## Reduced Course Load Policy:

It is the policy and practice of the University of Maine to comply with the Americans with Disabilities Act (ADA) and Section 4504 of the Rehabilitation Act of 1973. These laws direct the institution to provide academic adjustments to accommodate students with disabilities. To this end, the University has established a Reduced Course Load Policy for students with disabilities.

The University defines full-time student status as twelve credit hours per semester for undergraduates and six for graduate students. On the recommendation of the Office of Disability Services and an Advisory Committee, and with the approval of the Executive Vice President for Academic Affairs and Provost or designee, undergraduate students requesting reasonable accommodation for a documented disability who register for no fewer than six hours enjoy the rights and privileges of full-time students. Appropriate reduced hours for graduate students are determined on a case-by-case basis. Students granted reduced course load status are assessed mandatory fees in accordance with University policy. In some cases, receipt of benefits is contingent on payment of fees.

The policy does not extend to student eligibility for such programs as federal financial aid, U.S. Veterans Administration benefits, academic scholarships, and health insurance. Students approved for a reduced course load are responsible for determining the impact of that load on their eligibility for federal financial aid, VA benefits (including housing allowance), scholarships, and/or insurance. The University is not responsible for the reduction or loss of non-University aid, privileges, gifts, remuneration, or other real or perceived benefits resulting from a student's decision to carry a reduced course load.

Students requesting this accommodation must provide current comprehensive evidence of a documented disability from a health care professional and an official transcript from any institution(s) they attended prior to enrolling at the University of Maine.

The Office of Disability Support Services organizes and oversees all procedures relating to the enactment of this policy and provides a written annual report to the Provost. For further information, contact Disability Support Services (East Annex Bldg., 581-2319).

### Non-Degree Students

Students wishing to take courses at the University of Maine but who are not working towards a University of Maine degree are non-degree students. These students typically register for classes through the University's Division of Lifelong Learning (DLL, located in Chadbourne Hall). Except for courses offered through Continuing Education/Summer Session, the University allows non-degree registration in regular courses on a space-available basis.

Some non-degree students register and are advised through the appropriate academic colleges rather than through DLL. These include:

- Students holding a degree but who are pursuing a certificate (e.g., a teaching or professional certificate)
- Students who are degree students elsewhere but are attending the University of Maine under a formal student-exchange program (e.g., National Student Exchange, Canadian-American Exchange, New England Land-Grant University Student Exchange)

Non-degree students registered for 9 or more (Orono campus) credits per semester are eligible for campus housing on a space available basis. The University of Maine does not normally award student aid to non-degree students.

### Absence from the University Options

Students who plan to be away from the University for any period of time should choose the most appropriate method from the options below.

#### Domestic Study Away

Students who wish to take a course, semester or an academic year at another institution may request approval for domestic study away. This approval will keep the student as a fully enrolled University of Maine student while away. This is important for student aid purposes and for maintaining enrollment in one's degree program at UMaine. Students must be in good academic standing and have no financial indebtedness to any of the UMaine System Institutions. To ensure that the maximum number of credits transfer it is important that students plan course selection carefully with their academic advisor. Students must obtain prior approval for domestic study away from the associate dean of their college. Students who are applying for financial aid must complete a Domestic Study Away form available on the Office of Student Records website:  
<http://studentrecords.umaine.edu/forms/>

#### Leave of Absence

Students who wish to take a semester or two off from taking classes may request a leave of absence. Students taking a leave of absence retain the right to return to their college and keep the same catalog requirements without needing to reapply to the University. Students must be in good academic standing and have no financial indebtedness to the University. Students must obtain approval for a leave of absence the semester prior to the desired leave from the associate dean of their college.

#### Withdrawal

Students may experience life circumstances or medical conditions that compromise their health, safety, or academic success. In such circumstances, students may need to leave the university and their studies and resume the pursuit of their academic and co-curricular goals later. Students who wish to leave the University for more than two semesters should request a withdrawal. Withdrawing officially is preferable to simply ceasing to attend because it may prevent the assignment of failing grades that then are forever part of one's transcript. Withdrawing also allows for exploration of options to aid when returning at a later date. For the required withdrawal forms and a more complete explanation of the withdrawal process, go to:  
<http://studentrecords.umaine.edu/home/withdrawal-policy/>

Students who withdraw from the University will need to apply for readmission when they choose to return. Students who are absent for two or more years will need to meet the catalog requirement in effect at the time of readmission. The re-admit form is available on the Office of Student Records website: <http://studentrecords.umaine.edu/forms/> Refer to the Academic Calendar for specific dates and information pertaining to withdrawn classes. Students need to contact the associate dean of their college to withdraw from the University.

### **Registration for Classes**

#### **Immunization**

Maine law prohibits students born after 1956 from registering for classes until they have filed proof of immunization against measles, mumps, rubella, tetanus, and diphtheria with the Office of Student Records. New students will receive information about how to comply with this law upon admission to the University.

#### **Maximum Number of Credits**

Students select and register for classes in consultation with an academic advisor. Students wishing to register for more than 18 hours in a semester must obtain permission from the associate dean of their college.

#### **Course Numbering System**

Courses are numbered to indicate their level. Those numbered 000-099 are considered remedial and do not count towards a University degree. Courses numbered 100-299 are often introductory in nature and intended to be taken during the first two years of a baccalaureate degree program. The numbers 300-399 usually indicate advanced courses with prerequisites designed for the junior and senior years of the undergraduate program. Courses numbered 400-499 are advanced baccalaureate courses. Courses numbered 500-599 are designed for students working for graduate degrees, but undergraduates may take them with the permission of their academic advisor and of the professor teaching the course. Courses numbered 600-699 are highly advanced courses for graduate students exclusively.

#### **Schedule of Classes**

Not every course is offered every semester. The Schedule of Classes lists the courses scheduled to be taught in a given semester, showing the days, times, and building locations where they meet. Students should use the Catalog and the Schedule of Classes to prepare a tentative class schedule before meeting with their academic advisors.

#### **Registration**

The University of Maine gives priority in registration to those students who are closest to graduation. The details of the registration procedure may vary depending upon which of the University's colleges, schools or departments offer the student's major program. In general, after meeting with an academic advisor, students are enabled to perform the actual registration using a personal computer.

#### **Schedule Changes (Course Add/Drop/Withdrawal)**

**Full-Semester Length Classes:** The University of Maine allows students to make schedule adjustments for full-semester classes including adding courses, swapping sections within a course, and changing the grading option through the first five class days of the semester. Full-semester classes may be dropped through the first five weeks of the semester; however, there is no tuition refund after the tenth day of classes. Course withdrawals are noted on the transcript with a "W" grade from the sixth week through the eleventh week. Withdrawals after the eleventh week are graded with the "F" grade.

**Less than Full-Semester Length Classes:** Drop deadlines for classes meeting less than the full-semester are available in the student information system.



### **Continuing Education Registration**

The Continuing Education Division (CED) schedules courses in the evenings and on weekends for the convenience of students who can attend the University only on a part-time and evening basis. The content of these courses is the same as that of the same courses offered during the regular daytime hours. Degree students may register for a CED-sponsored course during the first week of the semester if space is available. Special policies for CED-sponsored courses governing cancellation, adding and dropping, and obtaining refunds are published in the CED fall and spring course schedules and the Summer Session catalog. A complete listing of courses offered through CED is available from the CED Office, Division of Lifelong Learning, 5713 Chadbourne Hall.

### **Definition of an Undergraduate Student Credit Hour**

The University of Maine defines a Student Credit Hour in an undergraduate program as an expectation, on average, of approximately 45 clock hours of student academic engagement per credit hour per course. Student Academic Engagement in a course can take many forms including, but not limited to: class time, testing, reading, writing, studying, discussion group time, laboratory work, internships, practica, practicing, performing or otherwise working on course content.

# Grades and Grading

## Academic Integrity

Academic honesty is very important. It is dishonest to cheat on exams, to copy terms papers or to submit papers written by another person, to "fake" experimental results, or to copy parts of books or articles into your own papers without putting the copied material in quotation marks and clearly indicating its source. Students committing or aiding any of these violations may be given failing grades for an assignment or for an entire course, at the discretion of the instructor. In addition to any academic action taken by an instructor, these violations are also subject to action under the University of Maine Student Conduct Code. The maximum possible sanction under the student conduct code is dismissal from the University. For details concerning these policies and the avenues of appeal open to students contact the Division of Student Affairs.

## Attendance

The overall policy of the University is that students are responsible for attending all class meetings for courses for which they are registered. Each instructor determines the specific attendance policy for the course and makes it known to students. Instructors may assign a lower letter grade for failure to adhere to the attendance policy.

Students sometimes miss classes because of ill health, family emergency, or other reasons beyond their control. It is the student's responsibility to notify instructors of the reasons for missing class and to make arrangements for making up missed work. If absences are extensive, even for legitimate reasons, it may be impossible to meet the objectives of the course.

### Participation Policy for Online Courses

The University of Maine expects all students enrolled in online coursework to actively participate in the course. For fully asynchronous courses and for asynchronous elements of hybrid courses, "participation" is defined as the student's virtual presence for, and participation in discussions, activities, and related forms of electronic contact occurring in a course's learning environment(s): e.g. participation in on-line discussion about academic matters, podcast viewing, group writing sessions, whole class or one-on-one chat, completion of assignments. Broad discretion regarding the required frequency and quality of a student's participation rests with the instructor of record and should be delineated in the course syllabus.

### Final Examinations

At the end of each semester final examinations are held in most courses. Final examinations are held according to a published schedule and cannot be taken before the scheduled time. Students who are scheduled for four or more final examinations in one day may have an examination rescheduled through the Office of Student Records. A student who misses the regular examination at the end of a semester for a legitimate reason should make arrangements with the instructor to make up the examination.

### Grading System

The University of Maine uses a letter-grade system ranging from A to F. Faculty members have the option of adding + (no A+) and - grades to the basic letter grades, but such fine distinctions may be inappropriate for many courses. Whatever the system used, it is important to understand that there is no University-wide equivalence between percentage grades (such as 80%) and letter grades (such as B). Each instructor makes these determinations according to the grading system described in the course syllabus.

The qualitative value of the five basic letter grades is defined as follows:

- **A**, Superior work.
- **B**, Good work.
- **C**, Satisfactory but undistinguished work.

- **D**, Poor work that does not adequately prepare students for more advanced work in the discipline. While some courses completed with D grades may contribute towards the total credits needed for graduation, others may be unacceptable for certain specific requirements and within the academic major.
- **F**, Failure. No credit is earned for a failed course. If student has not participated in at least half of the class, then the L grade is appropriate.

The grades A-F have the following numerical values used in calculating a student's Grade Point Average (GPA):

|           |           |           |           |
|-----------|-----------|-----------|-----------|
| A = 4.00  | B = 3.00  | C = 2.00  | D = 1.00  |
| A- = 3.67 | B- = 2.67 | C- = 1.67 | D- = 0.67 |
| B+ = 3.33 | C+ = 2.33 | D+ = 1.33 | F = 0.00  |

The University uses a variety of grades on transcripts to designate special circumstances. These include:

- **AU**, assigned only for courses taken under the audit option.
- **DG**, deferred grade. This is used only for courses that extend beyond a single semester.
- **F\***, for a course failed on the pass/fail grading option. No credit is earned and the GPA is not affected.
- **I**, for "Incomplete." This grade means that, in consultation with the student, the instructor has postponed the assignment of a final grade to allow the student to complete specific work not turned in before the end of the semester. Instructors assign the "I" grade only when they are persuaded that events beyond the student's control prevented the completion of assigned work on time and when the student has participated in more than 50% of the class. If the incomplete work is not submitted within the time allotted by the faculty member, the grade will automatically be changed to an "F" grade. Students receiving an "I" grade are not allowed to re-register for the same course until the incomplete has been made up or converted to an "F" grade. A student receiving an "I" grade may not make up missed work by sitting-in on the course the next time it is taught. Refer to the Incomplete Grade and Graduation section below.
- **L**, Failure for lack of participation. This grade indicates that a student participated in less than 50% of the class, but did not formally withdraw from the course. This grade counts the same as an F.
- **LP**, Low Pass, for a course passed on the pass/fail grading option with a D+, D, or D-. Credit is earned, but the grade point average (GPA) is not affected.
- **P**, for a course passed on the pass/fail grading option with a C- or above. Credit is earned, but the grade point average (GPA) is not affected.
- **TH**, final grade deferred. This is used only for the undergraduate thesis.
- **W**, indicating that the student officially withdrew from the course.

## Incomplete Grade and Graduation

A student is allowed to graduate with an "I" on the academic transcript only if all of the following conditions are met:

1. The course was taken no more than one academic year preceding graduation.
2. The student has at least 120 credits of graded work.
3. All college, department, and general education requirements have been satisfied.
4. The incomplete when counted as an "F" grade does not reduce the accumulative grade point average below 2.0

No grade or incomplete grades remaining on the record at the time of graduation will subsequently be replaced by a regular grade on the official record. If the incomplete work is made up following graduation but within the regularly allowable time period, the grade(s) will be noted at the end of the transcript and will not affect the grade point average which was in effect at the time of graduation.

## Grading Options

Students select one of three grading options for each course at the time of registration.

- Grade option. This is the option normally selected. It results in a grade (A-F) upon completion of the course. Courses in the major and courses meeting general education requirements must be taken for A-F grades.
- Pass/Fail option. Students may take a limited number of courses Pass/Fail. Students passing the course receive the P or LP grade and degree credit; students failing the course receive the F\* grade and no degree credit. Neither grade affects the student's grade point average. The purpose of the Pass/Fail option is to encourage students to take elective courses outside their area of expertise by allowing them to do so without risk to their GPA. Students taking Pass/Fail courses may be ineligible for some academic awards, or for selection as Valedictorian or Salutatorian. The following restrictions apply to use of the Pass/Fail option:
  - Students must have sophomore standing or higher and have a grade point average of at least 2.0 to register for a course Pass/Fail
  - No more than one course per semester may be taken Pass/Fail
  - The Pass/Fail option is not allowed for courses used to fulfill program requirements for the major, for the college, or for general education
  - Students normally select the Pass/Fail option when registering, but have until the end of the add/drop period for the course to change to the Pass/Fail option or back to the Grade option.
- Audit option. Students registered to audit a course attend class meetings but usually do not take exams or complete formal assignments. No grade is assigned and no degree credit is earned for an audited course, but full tuition is charged. The Audit option is appropriate only under special circumstances, and should only be used upon the advice of an academic advisor.
- Courses may be changed from the Grade or Pass/Fail option to the Audit option before the date specified in the Academic Calendar with the approval of an academic advisor and the student's dean. A student cannot change from an Audit to a grade beyond the add period for that class.

#### Deferred Grades for Honors Students

Students who are registered for Honors Directed Study (HON 498) and Honors Thesis (HON 499) have the option to receive a deferred grade ("T") while they are working on the Honors thesis. Students will not be allowed to graduate with a "T" grade. Students who have not completed their thesis work in the time frame allowed to complete graduation requirements, will be contacted by the Honors College and will either apply for graduation at a later date, or will be given a grade for the work that has been done and the student will graduate without Honors.

#### Grade Reports

Students may access their course grades via the Internet using MaineStreet. Course grades are available as they are received from instructors and processed following final exams.

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

#### Appealing Grade Assignments

The University of Maine has formal procedures by which students may appeal the assignment of grades by an instructor, accusations of cheating or plagiarism, or certain aspects of classroom procedure. The details of these appeal processes can be found in the online Student Handbook.

#### Repeat Policy

A student may repeat a course regardless of the grade or grades previously earned in that course. Full tuition is charged each time a course is repeated, but credit for a given course may be earned only once, even if the course is passed more than once. Only the most recent grade earned in a repeated course counts towards the accumulative grade-point average, even if the most recent grade is lower than one previously received for that course. When a repeated course is failed, any previously earned credit for that course is lost. The grades for all attempts of a course taken for credit appear on the student's transcript. Students will normally only be permitted to repeat a course twice, i.e. take the course for a maximum of three times, regardless of grade. Please note that there may be Student Financial Aid implications for repeating a course more than once after the student has earned a passing grade.

There may be limitations on the number of times that specific courses may be repeated in specific programs. Students should contact their academic advisor, the associate dean of their college or their program director about such limitations, and to discuss the advisability of repeating a course if they are eligible. Repeating a course may affect financial aid eligibility. Federal regulations limit financial aid funds to paying for one repetition only of a previously passed course even if a higher grade is still needed to advance in the academic program or is required for a subsequent course.

## **Academic Standing**

A student's academic standing depends upon the number of degree credits completed and the cumulative Grade Point Average (GPA). Degree credits are the number of course credits completed in courses numbered 100 and above in which a passing grade was earned. The GPA is the overall numerical grade, which may range from 0.00 to 4.00. This is calculated for each semester (the semester GPA) and overall for all courses taken (the cumulative GPA).

The university calculates the GPA by multiplying the number of credits for each course by the numerical equivalent of the letter grade earned for that course (See "grading system.") This calculation yields the number of quality points earned for that course. The semester GPA is obtained by dividing the total quality points earned in a semester by the total number of credits for which the student was registered that semester, not counting courses from which the student withdrew with a passing grade or courses taken Pass/Fail. The cumulative GPA is the total number of quality points earned at UMaine divided by the total number of credits taken at UMaine. These calculations are carried to two decimal places.

## **Academic Recognition**

The University recognizes outstanding academic achievement in several ways. Two of the most prestigious are the Presidential Scholar and the Dean's List. These achievements are based on calculable credits. Courses taken pass/fail are not calculable credit courses.

These recognitions of academic achievement are generated 35 calendar days after the last day of the final exam period. A student with any Incomplete or Missing Grade for the semester at the point when the records are reviewed is not eligible. Eligibility will not be recalculated after that date.

Academic achievements are recorded on the official transcript and are generated at the end of the fall and spring terms only.

### **Presidential Scholar**

To be recognized as a Presidential Scholar, a student must be degree-seeking, have completed 12 or more calculable credits in the semester, and have earned a 4.0 semester GPA.

### **Full-time Dean's List**

To be eligible for the Full-time Dean's List, a student must have completed 12 or more calculable credits in the semester and have earned a 3.50 or higher semester GPA.

### **Part-time Dean's List**

Students who have part-time status during both the fall and spring semesters of a given academic year are eligible for Part-time Dean's List. They must have completed 12 or more calculable credits over both terms and have earned a combined GPA in those terms of 3.50 or higher.

## **Academic Actions (Probation, Suspension, Dismissal)**

Degree seeking students who fail to meet the minimum academic standards for making satisfactory progress toward their degree, both in a single semester and overall are subject to an academic action.

A university-wide academic standing committee administers the academic standing policy by placing students on probation, suspension or dismissal.

A limited number of students are reviewed for suspension after the fall semester, including students in the Onward program, the Foundations program, and those operating under a fall-only contract in one of the degree granting colleges. All others not making satisfactory progress are placed on probation, often on a contract and subject to a thorough review at the end of the academic year.

### **Academic Probation**

The minimum acceptable cumulative grade point average needed for graduation is 2.0. Therefore any GPA below 2.0 is a warning to a student that such work will not permit graduation. Students are placed on probation following a semester in which her or his cumulative grade point average falls below 2.0. Further a student may be placed on probation following a semester in which he or she receives a semester grade point average less than 2.0, even though their cumulative grade point average remains at a 2.0 or higher.

A student on probation who does not improve her or his cumulative grade point average to a 2.0 may be continued on probation, suspended, or dismissed. A student on academic probation may be required to meet certain academic conditions defined by his or her college dean, such as level of coursework, academic achievement, etc. These conditions must be met for the student to be removed from probation and not suspended or dismissed. The action is posted to the official academic record.

### **Academic Suspension**

Students who fail to meet certain minimum academic standards may be subject to Academic Suspension (The Onward Program and Foundations Program students will need to meet specific requirements that are clearly outlined and mutually agreed upon).

Situations that lead to academic suspension are any one of the following:

1. Students receive a semester grade point average at or below 1.0
2. Students on academic probation fail to meet academic conditions as defined by the college dean, program director, or school director
3. First-year students acquire a cumulative average less than 1.5 at the end of the first two semesters; Sophomores (24-53 credits) acquire a cumulative average of 1.7 or less; Juniors (54-83 credits) acquire a cumulative average of 1.8 or less; Seniors (84+ credits) acquire a cumulative average of 1.9 or less

Exceptions to suspension may be made for degree seeking students who have met any of the following conditions:

1. Earned a semester average of at least 2.0 while on probation, but who have not achieved a 2.0 cumulative grade point average.
2. Taken only one course in a semester and receive a semester average of 1.0 or below
3. Been in good academic standing for three full-time semesters prior to a semester average at or below 1.0

A student on suspension is separated from the University for a minimum of one semester. A suspended student must file an application for readmission. The action is posted to the official academic record. Students may request permission from their associate dean or program or school director or coordinator to take one or two courses as a non-degree student while they are under suspension. However, students are ineligible for financial aid in this circumstance

### **Academic Dismissal**

Dismissal is the final action taken when students are not making satisfactory progress toward a degree or when students readmitted after suspension show no improvement in their cumulative average or otherwise fail to meet conditions set by the college.

A student who has been dismissed is considered separated from the University permanently and is not normally allowed readmission. The action is posted to the official academic records.

### **Program Dismissal**

Due to accreditation, licensure and career standards, some academic programs have more stringent academic and ethical standards than the University academic guidelines. Failure to meet program requirements will lead to dismissal from the program. Since this is a program dismissal and not a dismissal from the University, the student may seek other opportunities in another academic program at the university. The decision to dismiss a student from their program is considered to be a permanent action. Students who are dismissed from a program have the opportunity to appeal the decision to the Academic Standing Appeals Committee. The process, as well as the timing of such an appeal, is outlined in the notification of dismissal correspondence. The decision of the committee is final.

### **Summer Session Courses for Suspended and Dismissed Students**

Students who receive notification of suspension or dismissal who are currently attending a summer session course will be

allowed to complete that course for grade and credit. Students under suspension or dismissal will not be allowed to take any subsequent courses without the permission of the associate dean of their college.

### **Academic Forgiveness**

Academic forgiveness refers to the exclusion of an entire fall or spring semester from the calculation of a student's grade point average and earned credits. All grades remain on the transcript. When academic forgiveness occurs, the associate dean or designee may waive the re-taking of selected courses for which the student has earned sufficient grades. Though the degree credit has been removed, these courses may be used to meet degree requirements and to meet pre-requisite requirements. Students must achieve program minimum requirements to graduate.

Students may receive academic forgiveness once during their association with the university following one of the actions listed below. In all cases, the semester to be forgiven is the one immediately prior to the qualifying action and is contingent on completion of their first 12 or more graded credits in the subsequent semester with a minimum semester GPA of 2.3 and no grades less than a C-. Students who regularly maintain less than a 12 credit hour load should check with their dean's office regarding provisions for part-time students. Forgiveness must be requested in writing and once granted may not be revoked.

Actions eligible for academic forgiveness include the following:

- Readmission to the University after academic suspension
- Readmission to the University after a voluntary break in enrollment
- Changing academic majors within or between colleges, if this action represents a substantial change in curriculum as determined by the associate dean or designee.

Students receiving Academic Forgiveness are excluded for consideration of Valedictorian or Salutatorian awards. Academic Forgiveness may impact a student's eligibility for financial aid due to the Satisfactory Academic Progress Policy. Information is available at <http://umaine.edu/stuaid/policies/sap/>.

### **Fresh Start (5 year rule)**

Students requesting readmission after an absence of five or more years may be treated as external transfers in the determination of credits and grade point average. Credit is allowed for all University of Maine courses passed at the level of C- or higher. All grades remain on the academic transcript, but are removed from calculation of the accumulative grade point average. To be eligible for fresh start, students must have a minimum of 30 credits remaining toward degree completion and must complete those 30 credits in residence at the University of Maine. Students receiving a fresh start are ineligible for Valedictorian or Salutatorian awards. For more information, contact the Associate Dean or Director of the School or College you are readmitting into. Fresh Start may impact a student's eligibility for financial aid due to the Satisfactory Academic Progress Policy. Information is available at <http://umaine.edu/stuaid/policies/sap/>.



# Degree / Graduation Requirements

Each student is responsible for knowing and following the policies governing his or her course of study and for fulfilling all academic requirements for the degree sought. The faculty and the staff of the University are available to advise and assist students to understand and to meet these requirements. Students should direct questions about academic policies and degree requirements to their academic advisor or to their academic dean or program coordinator.

## Degree Requirements for Graduation

Degree requirements may change over time. Generally students are responsible for meeting the degree requirements published in the catalog in effect when they entered the university. Students who change to a different college must meet the college and university requirements in effect at the time of the change. Students who change to a different major must meet the major requirements in effect at the time of the change. Students who are absent from the university for two or more years must meet the program requirements in effect at the time of their return to the university.

Candidates for baccalaureate degrees must meet all of the following requirements:

1. receive acceptable grades in all required courses and credits, including General Education, college and major courses
2. accumulate the number of degree credits specified by the program in which they are registered (120 credits minimum)
3. achieve a cumulative grade point average of not less than 2.0 in University of Maine courses
4. earn a minimum of 30 credits originating from the University of Maine campus at the 300 level or higher over any year of study.\* There are two exceptions to this policy:
  - students who have already completed three or more years at the University of Maine (minimum of 90 credits of University of Maine courses) when, in the opinion of the student's academic program faculty in consultation with the student's dean, there is sufficient and valid reason to complete the senior year elsewhere
  - students who have completed a minimum of three years of work at the University of Maine and who have been admitted to an accredited professional school of medicine, dentistry, veterinary medicine, or divinity. With the approval of the academic program faculty in consultation with the student's dean, these students may qualify for the appropriate bachelor's degree at the University of Maine upon receipt of the professional degree.

\*An academic department may require that some minimum number of courses be completed within that department to earn a University of Maine degree in that discipline. These departmental residency requirements are noted in the description of each academic program elsewhere in this catalog.

### Double Degrees

Students may earn a second baccalaureate degree by completing at least 30 credits beyond the number required for the primary degree, and by completing all requirements of the second degree and, if the second degree is in a different college from the first, by completing all requirements of the second college.

Students intending to complete more than one degree are required to declare their intent to the dean of their college (or to the deans of both colleges, if the degree programs are in different colleges) in writing no later than first semester of the senior year. At that time the student must declare a primary degree. The student will receive two diplomas.

Students may also complete a second degree subsequent to graduation. Students selecting this option must be readmitted by the college where the new major resides, complete at least 30 credits beyond the minimum required for the first degree, and complete all college and major requirements for the second degree. If readmitted within two years of graduation, students may apply towards the 30-credit minimum any credits previously earned in excess of the minimum number required for the first degree. Students enrolling for a second degree two or more years after completing the first one must complete at least 30 additional credits, regardless of the number of credits earned previously.

Grade Point Average is based on a student's entire undergraduate career. A student's GPA will continue when re-admitted to a second degree program. The original GPA is fixed at graduation and will not be adjusted subsequently.

### **Double Majors**

Double majors are possible within a single baccalaureate degree. Both majors may be within the same college, or they may be in different colleges. Students may complete two different majors simultaneously with no prescribed increase in total credits beyond those required to satisfy both majors.

Students intending to complete the requirements of more than one major are required to declare their intent in writing to the dean of their college (or to the deans of both colleges, if the majors are in different colleges) no later than the first semester of the senior year. At this time the student must declare a primary major. The baccalaureate degree granted will be that associated with the primary major, and the student is required to satisfy all of the requirements imposed by that college. To complete the second major, the student need only complete the specific requirements established for that major. The primary and secondary majors will be noted both on the diploma and on the transcript, worded according to the following example: Bachelor of Science in Biology, with a second major in Art, or Bachelor of Art in Studio Art, with a second major in Biology (depending upon which is designated the primary major).

Students may also complete a second major subsequent to graduation. Students selecting this option must be readmitted to the college where the new major resides, and are required to satisfy only the specific requirements for the chosen second major that are in force at the time of readmission. Students who had declared the second major prior to graduation may continue to follow the catalog requirements in effect for that major if they have no break from the university or return within two years.

Students completing a second major via this mechanism will not receive a second, revised diploma, but the phrase "with a second major in X" will be added to the transcript to recognize the accomplishment.

### **Minors**

Minors are sets of courses designed to provide a student with substantial knowledge of a subject area outside of their major course of study. A minor is available to any degree-matriculated student as long as the program of study for the minor does not significantly overlap with the student's major course of study. The unit or units involved will determine how much overlap is appropriate at the time of declaration. Normally no more than one third of the requirements for the minor can overlap with the major requirements.

A student's transcript will indicate a declared minor. However, students need to officially declare their minor with the department, unit, 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 final transcript. If a student begins work on a minor but fails to meet all of the requirements, there is no penalty.

Minors are normally awarded at the same time a degree is conferred. Students who complete their baccalaureate but not their minor(s) requirements by graduation will be allowed to return to the university to complete the minor as long as the following criteria are met:

1. The student has declared the minor by the time of graduation; and
2. The student completes the requirements within a two-year period of the awarding of the accompanying baccalaureate degree

### **Concentrations**

A concentration is a set of courses available only to students within a declared major. Concentrations allow a student to place substantial emphasis on an academic subfield of the discipline. All concentrations within a major must share a subset of the core courses required for the major. In addition to these core courses, a concentration consists of a set of courses within the subfield, primarily within the upper level elective category of the major (300 or 400 level courses). Concentrations may not be completed after the accompanying degree has been earned. A student's transcript will indicate a completed concentration. However, students need to officially declare their concentration with the department, unit, or school where the concentration is offered.

### **Latin Honors**

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

- Summa cum laude: 3.7 GPA
- Magna cum laude: 3.5 GPA
- Cum laude: 3.3 GPA

The University bases the GPA only on the student's work at the University of Maine, and that must amount to at least 60 credits or 50 percent of the total degree credits required in the student's program of study, whichever is greater.

### **Honors**

Degrees designated with Honors, with High Honors, or with Highest Honors are awarded only to graduates successfully completing requirements in the University of Maine's Honors College.

### **Valedictorian/Salutatorian**

At each May Commencement the two highest-ranking baccalaureate degree candidates at the end of the previous Fall semester are designated class Valedictorian (highest) and Salutatorian (next highest). Only students who have completed at least 75 credits of UMaine coursework exclusive of pass/fail or incomplete grades are eligible for these honors. For purposes of determining Valedictorian and Salutatorian, all UMaine course grades appearing on the transcript will be averaged to compute the grade point average. All credits counting toward the baccalaureate degree must have been completed within eight years immediately preceding graduation. In the event of multiple students meeting these qualifications with the same grade point average, the two students with the highest number of UMaine credits completed at the end of the previous Fall semester, exclusive of pass/fail or incomplete grades, will be designated as Valedictorian and Salutatorian. In the event of a tie there will be co-Valedictorians.

### **New Valedictorian/Salutatorian Policy Effective Spring 2017**

Valedictorian and Salutatorian are the highest honors awarded to students by the University of Maine. Each student will be recognized for outstanding academic achievements and for contributions to the University or wider community.

To be considered for these awards, all candidates must meet the following eligibility criteria:

- Students must have completed at least 75 credits of coursework at the University of Maine, exclusive of pass/fail or incomplete grades.
- Students must have a minimum of at 3.8 GPA at the end of the fall semester prior to graduation.
- All credits counting toward the baccalaureate degree must have been completed within six (6) years immediately preceding graduation.
- Students must file for December or May graduation by published deadline.

In addition to the above listed criteria, the candidates will be evaluated upon the strength, breadth, and rigor of their academic achievements, evidence of intellectual promise, character, service and other accomplishments.

### **Celebration of Academia**

The conferral of baccalaureate, masters, and doctoral degrees upon students is an important event in the life of the institution, one rich in tradition dating to medieval times. It is a celebration of student achievement in which the faculty, the family and friends of the students, and the graduates themselves together mark the end of a formal program of education and the commencement of a new stage in life. All faculty members and graduating students are encouraged to participate in the formal May ceremony each year.

### **Application for Graduation**

Graduation is not automatic upon completion of all program requirements. Candidates for degrees must submit an Application for Graduation according to the following schedule:

- by March 15, for degrees to be awarded in May
- By July 15, for degrees to be awarded in August

- by November 15, for degrees to be awarded in December

General information and details of the application process are available at <http://www.studentrecords.umaine.edu/graduation/>

*Note: Students completing degree requirements during May Term are considered as August degree candidates.*

### **Graduation Timeline**

Each college performs final certification of degree completion within 60 days after the end of the term.

Students who apply for graduation but do not meet the minimum requirements will be notified by the college.

## General Education

Every University of Maine academic program is based upon a strong foundation in the liberal arts and sciences. The University's goal is to ensure that all of its graduates, regardless of the academic major they pursued, are broadly educated persons who can appreciate the achievements of civilization, understand the tensions within it, and contribute to resolving them. This component of every program is called general education, and it amounts to about one third of every program. The design of general education at the University of Maine is meant to be flexible within the broad goals it seeks to achieve. It affords each student many ways of meeting its requirements, which fall under the six broad categories outlined below.

Students who have completed the UMS General Education Transfer Block at any other UMS institution currently accredited by NEASC will be regarded as having completed all of their General Education requirements except for the following, which must be taken at the University of Maine:

- A minimum of three additional course credits in any of the UMaine Human Values and Social Context subcategory areas
- A Writing Intensive course in the Major Degree
- A Capstone Experience course
- Any specific General Education courses required by the major

Students who have previously earned a baccalaureate degree from a regionally accredited institution do not have to meet General Education requirements to earn a degree from UMaine. A student must meet the requirements of the major (assuming sufficient credits are accepted by transfer to total 120 credits or more, depending on the major) with at least 30 credits of 300 / 400-level courses from UMaine.

**Note:** Courses must be taken for letter grade only to satisfy a general education requirement.

## Science

Students must complete two courses in the physical or biological sciences. This may be accomplished in two ways:

1. By completing two courses with laboratories in the basic or applied sciences;
2. By completing one course in the applications of scientific knowledge, plus one course with a laboratory in the basic or applied sciences.

### Applications of Scientific Knowledge

**Important Note:** Students taking any of the courses listed below with an asterisk must meet specific requirements to earn this General Education Requirement. View the full course descriptions to learn specifically how these courses award this General Education Requirement.

- ANT 210 - Biological Anthropology Credits: 3
- ANT 260 - Forensic Anthropology Credits: 3
- ANT 317 - Fundamentals of Archaeology Credits: 3

- ANT 477 - Field Research in Archaeology Credits: 2-6
- ANT 479 - Laboratory Techniques in Prehistoric Archaeology Credits: 3
- \* AST 109 - Introduction to Astronomy Credits: 3
- AVS 211 - Introduction to Aquaculture Credits: 3
- \* BIO 222 - Biology: The Living Science Credits: 3
- BMB 207 - Fundamentals of Chemistry Credits: 3
- BMB 208 - Elementary Physiological Chemistry Credits: 3
- \* CHY 101 - Chemistry for Everyday Living Credits: 3
- \* CHY 121 - Introduction to Chemistry Credits: 3
- \* CHY 122 - The Molecular Basis of Chemical Change Credits: 3
- \* EES 140 - Soil Science Credits: 3
- ERS 100 - An Introductory Survey of Geology Credits: 3
- ERS 103 - Dynamic Earth Credits: 3
- ERS 108 - Beaches and Coasts Credits: 3
- ERS 191 - Energy in the Earth System Credits: 3
- \* ERS 210 - Geology Applied to Engineering Credits: 3
- FSN 101 - Introduction to Food and Nutrition Credits: 3
- FSN 121 - Brewing with Food Science Credits: 3
- GEE 298 - Introduction to Nanoscale Science and Engineering Credits: 3
- KPE 253 - Lifetime Fitness for Health Credits: 3
- PSE 105 - Principles of Sustainable Agriculture Credits: 3
- PSE 110 - Introduction to Horticulture and Green Design Credits: 3
- \* SFR 111 - Forest Through Time Credits: 1
- \* SFR 112 - Forests Through Time: Discussions Credits: 2
- SFR 215 - Introduction to Forest Bioproducts and Bioenergy Credits: 3
- SMS 100 - Introduction to Ocean Science Credits: 3
- SMS 108 - Beaches and Coasts Credits: 3
- \* SMS 110 - Concepts in Oceanography Credits: 3
- SMS 120 - Introduction to Forensics Credits: 3
- SMS 211 - Introduction to Aquaculture Credits: 3
- \* WLE 200 - Ecology Credits: 3
- WLE 413 - Wetland Delineation and Mapping Credits: 4

## Laboratory in the Basic or Applied Sciences

**Important Note:** Students taking any of the courses listed below with an asterisk must meet specific requirements to earn this General Education Requirement. View the full course descriptions to learn specifically how these courses award this General Education Requirement.

- ANT 478 - Zooarchaeology Credits: 4
- \* AST 109 - Introduction to Astronomy Credits: 3
- \* AST 110 - Introduction to Astronomy Laboratory Credits: 1
- AVS 145 - Animal Science Credits: 4
- BIO 100 - Basic Biology Credits: 4
- BIO 200 - Biology of Organisms Credits: 4
- BIO 205 - Field Natural History of Maine Credits: 4
- BIO 208 - Anatomy and Physiology Credits: 4

- \* BIO 222 - Biology: The Living Science Credits: 3
- \* BIO 223 - Biology: The Living Science Laboratory Credits: 1
- BIO 310 - Plant Biology Credits: 4
- BIO 326 - General Entomology Credits: 4
- BIO 327 - Introductory Applied Entomology Credits: 4
- BIO 432 - Biology of the Fungi Credits: 4
- BIO 463 - River Ecology Credits: 4
- BIO 464 - Taxonomy of Vascular Plants Credits: 4
- BMB 207 - Fundamentals of Chemistry Credits: 3
- BMB 208 - Elementary Physiological Chemistry Credits: 3
- BMB 209 - Fundamentals of Chemistry Laboratory Credits: 1
- BMB 210 - Elementary Physiological Chemistry Laboratory Credits: 1
- \* CHY 101 - Chemistry for Everyday Living Credits: 3
- \* CHY 102 - Chemistry for Everyday Living Laboratory Credits: 1
- \* CHY 121 - Introduction to Chemistry Credits: 3
- \* CHY 122 - The Molecular Basis of Chemical Change Credits: 3
- \* CHY 123 - Introduction to Chemistry Laboratory Credits: 1
- \* CHY 124 - The Molecular Basis of Chemical Change Laboratory Credits: 1
- \* EES 140 - Soil Science Credits: 3
- \* EES 141 - Soil Science Laboratory Credits: 1
- ERS 101 - Introduction to Geology Credits: 4
- ERS 102 - Environmental Geology of Maine Credits: 4
- ERS 200 - Earth Systems Credits: 4
- ERS 201 - Global Environmental Change Credits: 4
- \* ERS 210 - Geology Applied to Engineering Credits: 3
- \* ERS 211 - Geology Applied to Engineering Laboratory Credits: 1
- ERS 240 - The Atmosphere Credits: 4
- PHY 101 - Physics by Inquiry I Credits: 4
- PHY 102 - Physics by Inquiry II Credits: 4
- PHY 105 - Descriptive Physics Credits: 4
- PHY 107 - Technical Physics I Credits: 4
- PHY 108 - Technical Physics II Credits: 4
- PHY 111 - General Physics I Credits: 4
- PHY 112 - General Physics II Credits: 4
- PHY 121 - Physics for Engineers and Physical Scientists I Credits: 4
- PHY 122 - Physics for Engineers and Physical Scientists II Credits: 4
- PSE 100 - Plant Science Credits: 4
- \* SFR 100 - Introduction to Forest Biology Credits: 3
- \* SFR 101 - Introduction to Forest Resources Credits: 1
- \* SFR 102 - Structure and Function of Woody Plants Laboratory Credits: 1
- \* SFR 111 - Forest Through Time Credits: 1
- \* SFR 112 - Forests Through Time: Discussions Credits: 2
- \* SMS 110 - Concepts in Oceanography Credits: 3
- \* SMS 111 - Concepts in Oceanography Laboratory Credits: 1
- \* WLE 200 - Ecology Credits: 3
- \* WLE 201 - Ecology Laboratory Credits: 3
- WLE 423 - Wetland Ecology and Conservation Credits: 4

## Human Values and Social Contexts

Students must complete 18 credits in this broad area, selected from lists of approved courses to satisfy each of five sub-categories. (Courses that satisfy requirements in more than one sub-category may be counted in each appropriate sub-category, but credits may be counted only once.)

1. Western cultural tradition
2. Social contexts and institutions
3. Cultural diversity and international perspectives
4. Population and the environment
5. Artistic and creative expression

Completion of any of these courses (HON 111, 112, 211 or 212) satisfies either the General Education Western Cultural Tradition or the Cultural Diversity and International Perspectives requirement. Completion of any two satisfies the Western Cultural Tradition, Cultural Diversity and International Perspectives, and Ethics requirements. Completion of three satisfies the Western Cultural Tradition, Cultural Diversity and International Perspectives, Social Context and Institutions, and Ethics requirements. Completion of all four satisfies the Ethics requirement and all areas of the Human Values and Social Context requirements for 16 of the total 18 credits required in those areas.

### 1. Western Cultural Traditio

- ANT 120 - Religions of the World Credits: 3
- ANT 221 - Introduction to Folklore Credits: 3
- ANT 316 - Shipwreck Sites: Archaeological and Historical Investigations Credits: 3
- ANT 330 - The U.S. Folk Experience Credits: 3
- ARH 155 - Art and Visual Culture in the Ancient and Medieval Worlds Credits: 3
- ARH 156 - Art and Visual Culture in the Modern Era Credits: 3
- ARH 251 - Classical Art and Architecture Credits: 3
- ARH 252 - Mediterranean Medieval Art and Architecture Credits: 3
- ARH 253 - Northern European Medieval Art and Architecture Credits: 3
- ARH 255 - Italian Renaissance Art Credits: 3
- ARH 257 - Northern Renaissance Art Credits: 3
- ARH 258 - Baroque Art and Architecture Credits: 3
- ARH 261 - Nineteenth-Century European Art Credits: 3
- ARH 264 - Themes and Issues in Contemporary Art Credits: 3
- ARH 265 - American Art Credits: 3
- ARH 362 - Medieval Art and Architecture Seminar Credits: 3
- ARH 363 - Renaissance Art and Architecture Seminar Credits: 3
- ARH 451 - Art Theory and Criticism Credits: 3
- ARH 452 - Critical Methods in History of Art Credits: 3
- ARH 466 - Twentieth Century Art and Architecture Seminar Credits: 3
- ARH 492 - Baroque Research Seminar Credits: 3
- ARH 493 - Medieval Research Seminar Credits: 3
- ARH 494 - Renaissance Research Seminar Credits: 3
- ARH 495 - Modern/Post-Modern Seminar Credits: 3
- CAN 101 - Introduction to Canadian Studies Credits: 3
- CLA 101 - Greek Literature in English Translation Credits: 3

- CLA 102 - Latin Literature in English Translation Credits: 3
- CLA 400 - Hero: Myth and Meaning Credits: 3
- CLA 401 - Amazons: Myth and Reality Credits: 3
- CMJ 201 - Communication Studies I Credits: 3
- CMJ 211 - Journalism Studies I: Introduction and History Credits: 3
- CMJ 375 - Journalism Studies II: Law and Ethics Credits: 3
- ECO 335 - History of Economic Thought Credits: 3
- ECO 343 - North American Economic Integration Credits: 3
- ENG 131 - The Nature of Story Credits: 3
- ENG 222 - Reading Poems Credits: 3
- ENG 231 - Western Tradition in Literature: Homer Through the Renaissance Credits: 3
- ENG 235 - Literature and the Modern World Credits: 3
- ENG 236 - Intro to Canadian Literature Credits: 3
- ENG 243 - Topics in Multicultural Literature Credits: 3
- ENG 244 - Writers of Maine Credits: 3
- ENG 245 - American Short Fiction Credits: 3
- ENG 246 - American Women's Literature Credits: 3
- ENG 251 - English Literature Survey: Beginnings Through Neoclassicism Credits: 3
- ENG 253 - Shakespeare: Selected Plays Credits: 3
- ENG 256 - British Women's Literature Credits: 3
- ENG 271 - The Act of Interpretation Credits: 3
- ENG 280 - Introduction to Film Credits: 3
- ENG 341 - Colonial and Early National American Literature Credits: 3
- ENG 342 - Native American Literature Credits: 3
- ENG 343 - Nineteenth-Century American Literature Credits: 3
- ENG 351 - Medieval English Literature Credits: 3
- ENG 353 - Shakespeare and the English Renaissance Credits: 3
- ENG 355 - Restoration and Eighteenth-Century British Literature Credits: 3
- ENG 357 - Nineteenth-Century British Literature Credits: 3
- ENG 361 - Modernism Credits: 3
- ENG 363 - Literature of the Postmodern Period Credits: 3
- ENG 364 - Contemporary Literature Credits: 3
- ENG 371 - Readings in Literary Theory and Criticism Credits: 3
- ENG 381 - Themes in Literature Credits: 3
- ENG 382 - Major Genres in Historical Perspective Credits: 3
- ESS 315 - Teaching Social Studies in the Elementary School Credits: 3
- FAS 101 - Introduction to Franco American Studies Credits: 3
- FRE 463 - Quebec Poetry Credits: 3
- FRE 464 - Quebec Theatre Credits: 3
- FRE 495 - Senior Project in French Credits: 0-3
- GEO 349 - Early Modern North America in Atlantic Perspective Credits: 3
- GER 401 - Major Cultural Periods Credits: 3
- GER 413 - German Literature and Culture, 1900 to 1945 Credits: 3
- GER 420 - German Film Credits: 3
- GER 495 - Senior Project in German Credits: 1-3
- HTY 103 - United States History I Credits: 3
- HTY 104 - United States History II Credits: 3



- HTY 105 - History of Ancient and Medieval Europe Credits: 3
- HTY 106 - History of Modern Europe Credits: 3
- HTY 109 - Introduction to Early Latin America Credits: 3
- HTY 110 - Introduction to Modern Latin America Credits: 3
- HTY 210 - History of Maine Credits: 3
- HTY 211 - Maine and the Sea Credits: 3
- HTY 213 - History of the Maine Woods Credits: 3
- HTY 218 - History of Film Credits: 3
- HTY 251 - Technology and Society from Ancient Times till the Present Credits: 3
- HTY 278 - American Military History Credits: 3
- HTY 279 - European Military History Credits: 3
- HTY 280 - Naval History Credits: 3
- HTY 312 - Furs, Frontiers, and Fame: North American Exploration Credits: 3
- HTY 316 - Shipwreck Sites: Archaeological and Historical Investigations Credits: 3
- HTY 330 - Robber Barons, Reformers and Radicals 1877-1914 Credits: 3
- HTY 332 - Womanhood in America Credits: 3
- HTY 338 - Everyday Life in America, 1600-1850 Credits: 3
- HTY 349 - Early Modern North America in Atlantic Perspective Credits: 3
- HTY 403 - Early Middle Ages Credits: 3
- HTY 404 - Late Middle Ages Credits: 3
- HTY 405 - Early Modern Europe: Renaissance, Reformation and the Foundation of the Modern World-System Credits: 3
- HTY 407 - The Age of Monarchs and Revolution: Europe, 1648-1815 Credits: 3
- HTY 409 - Twentieth Century Europe I, 1914-1945 Credits: 3
- HTY 410 - 20th Century Europe II, Since 1945 Credits: 3
- HTY 411 - The Holocaust Credits: 3
- HTY 416 - The American South Credits: 3
- HTY 420 - Science and Society Since 1800 Credits: 3
- HTY 423 - History of Russia I Credits: 3
- HTY 424 - History of Russia II: The Russian Revolution, 1881-1991 Credits: 3
- HTY 426 - History of Modern Germany Credits: 3
- HTY 429 - History of Modern Italy Credits: 3
- HTY 450 - History of the British Empire Credits: 3
- HTY 455 - History of Great Britain I Credits: 3
- HTY 456 - History of Modern Britain Credits: 3
- HTY 461 - Colonial British America to 1763 Credits: 3
- HTY 462 - The American Revolution Credits: 3
- HTY 464 - America at the Crossroads: The Era of Civil War Reconstruction 1840-1876 Credits: 3
- HTY 467 - Early 20th Century America, 1914-1945 Credits: 3
- HTY 468 - America Since 1945 Credits: 3
- HTY 473 - History of U.S. Foreign Relations I Credits: 3
- HTY 474 - History of U.S. Foreign Relations II Credits: 3
- HTY 477 - The American Worker Credits: 3
- HTY 483 - Violence in North American History Credits: 3
- HTY 487 - The First World War Credits: 3
- HTY 491 - Technology and Society Until 1800 Credits: 3
- HTY 492 - Technology and Society Since 1800 Credits: 3
- HTY 494 - Women, History and American Society: Selected Topics Credits: 3

- INT 441 - (ANT, HTY, SMS) Maritime History and Archaeology of New England Credits: 3
- LAT 203 - Readings in Latin Literature I Credits: 3
- LAT 204 - Readings in Latin Literature II Credits: 3
- MLC 231 - Western Tradition in Literature: Homer Through the Renaissance Credits: 3
- MLC 495 - Senior Project in Modern Languages Credits: 1-3
- MSL 301 - Adaptive Team Leadership Credits: 3
- MSL 350 - The Evolution of American Warfare Credits: 3
- MUL 202 - The Art of Listening to Music: Historical Survey Credits: 3
- NAV 202 - Sea Power and Maritime Affairs Credits: 3
- NAV 310 - Evolution of Warfare Credits: 3
- PHI 100 - Contemporary Moral Problems Credits: 3
- PHI 102 - Introduction to Philosophy Credits: 3
- PHI 103 - Methods of Reasoning Credits: 3
- PHI 104 - Existentialism and Literature Credits: 3
- PHI 105 - Introduction to Religious Studies Credits: 3
- PHI 200 - Problems in Recent Philosophy Credits: 3
- PHI 210 - History of Ancient Philosophy Credits: 3
- PHI 212 - Hegel and 19th Century Philosophy Credits: 3
- PHI 214 - 20th Century Continental Philosophy Credits: 3
- PHI 223 - Modern Jewish Thought Credits: 3
- PHI 230 - Ethics Credits: 3
- PHI 231 - Topics in Applied Ethics Credits: 3
- PHI 235 - Biomedical Ethics Credits: 3
- PHI 236 - Feminist Ethical, Social and Political Theory Credits: 3
- PHI 240 - Social and Political Philosophy Credits: 3
- PHI 244 - Philosophy of Law Credits: 3
- PHI 250 - Formal Logic Credits: 3
- PHI 260 - Philosophy of Language Credits: 3
- PHI 262 - Philosophy of Art Credits: 3
- PHI 312 - History of Modern Philosophy Credits: 3
- PHI 317 - Existentialism and Phenomenology Credits: 3
- PHI 342 - Marxist Philosophy I: The Philosophy of Karl Marx Credits: 3
- PHI 344 - Theories of Justice Credits: 3
- PHI 353 - Philosophy of Mind Credits: 3
- PHI 364 - Views of Self: East and West Credits: 3
- PHI 382 - Theories of Myth Credits: 3
- PHI 420 - Topics in Recent Continental Philosophy Credits: 3
- POS 120 - Introduction to World Politics Credits: 3
- POS 201 - Introduction to Political Theory Credits: 3
- POS 241 - Introduction to Comparative Politics Credits: 3
- POS 243 - Canadian Government and Politics Credits: 3
- POS 273 - International Relations Credits: 3
- POS 301 - Classical Political Thought Credits: 3
- POS 302 - Medieval Political Thought Credits: 3
- POS 303 - Early Modern Political Thought Credits: 3
- POS 304 - American Political Thought Credits: 3
- POS 305 - Late Modern Political Thought Credits: 3

- POS 307 - Democratic Theory Credits: 3
- POS 344 - Public Policy in Canada Credits: 3
- POS 372 - Canadian Foreign Policy Credits: 3
- POS 384 - American Civil Liberties Credits: 3
- POS 401 - Seminar in Political Theory Credits: 3
- SFR 220 - Environment and Society Credits: 3
- SFR 480 - Wilderness and Protected Areas Management Credits: 3
- SPA 307 - Readings in Peninsular Literature Credits: 3
- SPA 401 - Golden Age Credits: 3
- SPA 403 - Cervantes Credits: 3
- SPA 406 - Spanish Literature of the Twentieth Century Credits: 3
- SPA 495 - Senior Project in Spanish Credits: 0-3
- SVT 221 - Boundary Law Credits: 3
- THE 112 - Survey of Dramatic Literature Credits: 3

## 2. Social Context and Institutions

- ANT 101 - Introduction to Anthropology: Human Origins and Prehistory Credits: 3
- ANT 120 - Religions of the World Credits: 3
- ANT 249 - Religion and Violence Credits: 3
- ANT 256 - Ethnic Conflict Credits: 3
- ANT 261 - Islamic Fundamentalism Credits: 3
- ANT 270 - Environmental Justice Movements in the United States Credits: 3
- ANT 300 - Basic Theory in Cultural Anthropology Credits: 3
- ANT 430 - Who Owns Native Cultures? Credits: 3
- ANT 441 - People and Cultures of the Pacific Islands Credits: 3
- ANT 454 - Cultures and Societies of the Middle East Credits: 3
- ANT 458 - Anthropology of War Credits: 3
- ANT 459 - Peoples and Cultures of South America Credits: 3
- ANT 464 - Ecological Anthropology Credits: 3
- ANT 465 - Political Anthropology Credits: 3
- ANT 466 - Economic Anthropology Credits: 3
- ANT 469 - Theories of Religion Credits: 3
- ANT 470 - Religion and Politics Credits: 3
- ANT 476 - The Ancient Maya Credits: 3
- ARH 270 - Topical Survey in History of Art Credits: 3
- BUA 220 - The Legal Environment of Business Credits: 3
- BUA 331 - Labor-Management Relations Credits: 3
- CET 451 - Construction Law Credits: 3
- CHF 200 - Family Interaction Credits: 3
- CHF 201 - Introduction to Child Development Credits: 3
- CHF 351 - Human Sexuality Credits: 3
- CMJ 100 - Introduction to Mass Communication Credits: 3
- CMJ 102 - Fundamentals of Interpersonal Communication Credits: 3
- CMJ 103 - Fundamentals of Public Communication Credits: 3

- CMJ 107 - Communication and the Environment Credits: 3
- CMJ 202 - Communication Studies II Credits: 3
- CMJ 211 - Journalism Studies I: Introduction and History Credits: 3
- CMJ 314 - International Mass Communication Credits: 3
- CMJ 375 - Journalism Studies II: Law and Ethics Credits: 3
- CMJ 380 - Advertising, Media and Society Credits: 3
- CMJ 405 - Women and Communication Credits: 3
- CMJ 410 - Social Influence of Mass Communication Credits: 3
- CMJ 412 - Electronic Media Management and Programming Credits: 3
- CMJ 420 - Health Communication Credits: 3
- DIS 400 - Disability as Diversity I Credits: 3
- DIS 450 - Disability: Population-Environment Diversity Credits: 3
- ECO 100 - Intro to Economics Credits: 3
- ECO 120 - Principles of Microeconomics Credits: 3
- ECO 121 - Principles of Macroeconomics Credits: 3
- ECO 180 - Citizens, Energy & Sustainability Credits: 3
- ECO 190 - World Food Supply, Population and the Environment Credits: 3
- ECO 377 - Introduction to Natural Resource Economics and Policy Credits: 3
- ECO 443 - Introduction to Modern Economic Growth Credits: 3
- ECO 471 - Public Finance and Fiscal Policy Credits: 3
- ECO 475 - Industrial Organization Credits: 3
- ENG 280 - Introduction to Film Credits: 3
- FAS 101 - Introduction to Franco American Studies Credits: 3
- FSN 301 - Life Cycle Nutrition Credits: 3
- GER 307 - German for the Professions Credits: 3
- HON 170 - Currents and Context Credits: 1
- HTY 103 - United States History I Credits: 3
- HTY 104 - United States History II Credits: 3
- HTY 105 - History of Ancient and Medieval Europe Credits: 3
- HTY 106 - History of Modern Europe Credits: 3
- HTY 107 - East Asian Civilization I Credits: 3
- HTY 108 - India: Identities and Changes Credits: 3
- HTY 112 - Introduction to Africa Credits: 3
- HTY 210 - History of Maine Credits: 3
- HTY 220 - North American Indian History Credits: 3
- HTY 240 - Creation of the Atlantic World, 1450-1888 Credits: 3
- HTY 241 - History of Globalization, 1900-Present Credits: 3
- HTY 251 - Technology and Society from Ancient Times till the Present Credits: 3
- HTY 278 - American Military History Credits: 3
- HTY 280 - Naval History Credits: 3
- HTY 338 - Everyday Life in America, 1600-1850 Credits: 3
- HTY 341 - The Making of Modern China Credits: 3
- HTY 437 - History of Modern Japan Credits: 3
- HTY 442 - The United States and Vietnam: A History Credits: 3
- HTY 449 - History of South Africa Credits: 3
- HTY 462 - The American Revolution Credits: 3
- HTY 473 - History of U.S. Foreign Relations I Credits: 3

- HTY 474 - History of U.S. Foreign Relations II Credits: 3
- INA 101 - Introduction to International Affairs Credits: 3
- INT 333 - (University Wide) Why Do We Believe the Things We Do? Credits: 3
- INT 490 - (University Wide) Lies, Deception and Heroification Credits: 3
- INT 491 - (University Wide) A Midwife's Tale and the Social Web Credits: 3
- INV 180 - Create: Innovation Engineering I Credits: 3
- INV 392 - Commercialize: Innovation Engineering III Credits: 3
- LAT 203 - Readings in Latin Literature I Credits: 3
- LAT 204 - Readings in Latin Literature II Credits: 3
- LBR 200 - Information Literacy Credits: 3
- LDR 100 - Foundations of Leadership Credits: 3
- LDR 300 - Advanced Leadership Theory and Practice Credits: 3
- LST 101 - Introduction to Labor Studies Credits: 3
- LST 201 - Work and Labor in a Global Economy Credits: 3
- MES 201 - The Maine Coast Credits: 3
- MLC 421 - World Cinema: Multiple Perspectives on Identity and Culture Credits: 3
- MSL 350 - The Evolution of American Warfare Credits: 3
- MSL 401 - Mission Command and the Army Profession Credits: 4
- MSL 402 - Mission Command and the Company Grade Officer Credits: 4
- NAS 101 - Introduction to Native American Studies Credits: 3
- NAS 102 - Introduction to Wabanaki Culture, History and Contemporary Issues Credits: 3
- NAS 270 - Native American Women Credits: 3
- NAV 202 - Sea Power and Maritime Affairs Credits: 3
- NAV 310 - Evolution of Warfare Credits: 3
- NUR 415 - Socio-Cultural Issues in Health and Health Care Credits: 3
- PAX 201 - Introduction to Peace and Reconciliation Studies Credits: 3
- PAX 250 - Peace and Pop Culture Credits: 3
- PAX 260 - Realistic Pacifism Credits: 3
- PAX 360 - Conflict Resolution: A Relational Approach To Working Through Conflict Credits: 3
- PAX 400 - Martin Luther King and the Promise of Social Renewal Credits: 3
- PAX 401 - Women Social Activists: Warriors for Peace and Justice Credits: 3
- PHI 100 - Contemporary Moral Problems Credits: 3
- PHI 105 - Introduction to Religious Studies Credits: 3
- PHI 212 - Hegel and 19th Century Philosophy Credits: 3
- PHI 214 - 20th Century Continental Philosophy Credits: 3
- PHI 231 - Topics in Applied Ethics Credits: 3
- PHI 232 - Environmental Ethics Credits: 3
- PHI 233 - Business Ethics Credits: 3
- PHI 235 - Biomedical Ethics Credits: 3
- PHI 236 - Feminist Ethical, Social and Political Theory Credits: 3
- PHI 244 - Philosophy of Law Credits: 3
- PHI 345 - Global Justice Credits: 3
- PHI 353 - Philosophy of Mind Credits: 3
- PHI 432 - Environmental Philosophy and Policy Credits: 3
- POS 100 - American Government Credits: 3
- POS 201 - Introduction to Political Theory Credits: 3
- POS 203 - American State and Local Government Credits: 3

- POS 241 - Introduction to Comparative Politics Credits: 3
- POS 243 - Canadian Government and Politics Credits: 3
- POS 273 - International Relations Credits: 3
- POS 301 - Classical Political Thought Credits: 3
- POS 302 - Medieval Political Thought Credits: 3
- POS 305 - Late Modern Political Thought Credits: 3
- POS 306 - Crafting the American Constitution Credits: 3
- POS 335 - Major Governments of Western Europe Credits: 3
- POS 336 - Government and Politics in Russia Credits: 3
- POS 337 - Government and Politics in Eurasia Credits: 3
- POS 344 - Public Policy in Canada Credits: 3
- POS 348 - The Politics of Sport in America Credits: 3
- POS 352 - American Public Opinion Credits: 3
- POS 353 - The U.S. Congress Credits: 3
- POS 354 - The U.S. Presidency Credits: 3
- POS 363 - Urban Government and Politics Credits: 3
- POS 368 - China Credits: 3
- POS 372 - Canadian Foreign Policy Credits: 3
- POS 374 - American Foreign Policy Credits: 3
- POS 380 - Interest Groups and American Politics Credits: 3
- POS 381 - Political Parties and Elections Credits: 3
- POS 383 - American Constitutional Law Credits: 3
- POS 384 - American Civil Liberties Credits: 3
- POS 385 - Women and Politics Credits: 3
- POS 386 - Religion and Politics in the United States Credits: 3
- POS 401 - Seminar in Political Theory Credits: 3
- POS 467 - African Politics Credits: 3
- POS 474 - Conduct of Foreign Policy Credits: 3
- POS 475 - International Security Credits: 3
- POS 484 - The American Constitution and Criminal Due Process Credits: 3
- POS 486 - Religious Thought, the American Identity, and U.S. Public Policy Credits: 3
- PSY 100 - General Psychology Credits: 3
- PSY 230 - Social Psychology Credits: 3
- PSY 423 - The Psychology of Parenting Credits: 3
- SFR 222 - Environmental Communication Skills Credits: 3
- SFR 225 - Readings in Outdoor Recreation Credits: 3
- SFR 444 - Forest Resources Economics Credits: 3
- SFR 446 - Forest Resources Policy Credits: 3
- SOC 101 - Introduction to Sociology Credits: 3
- SOC 201 - Social Inequality Credits: 3
- SOC 202 - Social Problems Credits: 3
- SOC 208 - Problems of Violence and Terrorism Credits: 3
- SOC 214 - Crime and Criminal Justice Credits: 3
- SOC 220 - Deviance and Social Control Credits: 3
- SOC 240 - Topics in Sociology Credits: 3
- SOC 314 - Law and Society Credits: 3
- SOC 318 - Sociology of the Family Credits: 3

- SOC 329 - Sociology of Gender Credits: 3
- SOC 330 - Perspectives on Women Credits: 3
- SOC 337 - Sociology of Mental Illness Credits: 3
- SOC 482 - The Sociology of Religion Credits: 3
- SPA 420 - Spanish Film Credits: 3
- SPA 496 - Service Learning in Spanish Credits: 3
- SWK 320 - Introduction to Social Work Credits: 3
- SWK 365 - Problems of Child Abuse and Neglect: A Multidisciplinary Approach Credits: 3
- SWK 440 - Social Welfare Policy and Issues Credits: 3
- WGS 101 - Women's, Gender and Sexuality Studies Credits: 3
- WGS 103 - Introduction to Lesbian, Gay, Bisexual, and Transgender Studies Credits: 3
- WGS 270 - Native American Women Credits: 3
- WGS 480 - Senior Seminar in Women's, Gender, and Sexuality Studies Credits: 3
- WGS 451 - Women's Sexuality Credits: 3

### 3. Cultural Diversity and International Perspectives

- ANT 101 - Introduction to Anthropology: Human Origins and Prehistory Credits: 3
- ANT 102 - Introduction to Anthropology: Diversity of Cultures Credits: 3
- ANT 120 - Religions of the World Credits: 3
- ANT 140 - Cities of the Ancient World Credits: 3
- ANT 207 - Introduction to World Archaeology Credits: 3
- ANT 212 - The Anthropology of Food Credits: 3
- ANT 221 - Introduction to Folklore Credits: 3
- ANT 245 - Sex and Gender in Cross-Cultural Perspective Credits: 3
- ANT 249 - Religion and Violence Credits: 3
- ANT 250 - Conservation Anthropology: The Socio-Cultural Dimension of Environmental Issues Credits: 3
- ANT 256 - Ethnic Conflict Credits: 3
- ANT 261 - Islamic Fundamentalism Credits: 3
- ANT 270 - Environmental Justice Movements in the United States Credits: 3
- ANT 300 - Basic Theory in Cultural Anthropology Credits: 3
- ANT 317 - Fundamentals of Archaeology Credits: 3
- ANT 330 - The U.S. Folk Experience Credits: 3
- ANT 426 - Native American Folklore Credits: 3
- ANT 430 - Who Owns Native Cultures? Credits: 3
- ANT 441 - People and Cultures of the Pacific Islands Credits: 3
- ANT 451 - Native American Cultures and Identities Credits: 3
- ANT 454 - Cultures and Societies of the Middle East Credits: 3
- ANT 458 - Anthropology of War Credits: 3
- ANT 459 - Peoples and Cultures of South America Credits: 3
- ANT 464 - Ecological Anthropology Credits: 3
- ANT 465 - Political Anthropology Credits: 3
- ANT 466 - Economic Anthropology Credits: 3
- ANT 469 - Theories of Religion Credits: 3
- ANT 470 - Religion and Politics Credits: 3

- ANT 476 - The Ancient Maya Credits: 3
- ANT 477 - Field Research in Archaeology Credits: 2-6
- ANT 480 - Andean Prehistory Credits: 3
- ARA 101 - Elementary Arabic I Credits: 5
- ARA 102 - Elementary Arabic II Credits: 5
- ARH 100 - Art and Human Experience Credits: 3
- ARH 155 - Art and Visual Culture in the Ancient and Medieval Worlds Credits: 3
- ARH 251 - Classical Art and Architecture Credits: 3
- ARH 252 - Mediterranean Medieval Art and Architecture Credits: 3
- ARH 253 - Northern European Medieval Art and Architecture Credits: 3
- ARH 255 - Italian Renaissance Art Credits: 3
- ARH 257 - Northern Renaissance Art Credits: 3
- ARH 258 - Baroque Art and Architecture Credits: 3
- ARH 270 - Topical Survey in History of Art Credits: 3
- ARH 362 - Medieval Art and Architecture Seminar Credits: 3
- ARH 363 - Renaissance Art and Architecture Seminar Credits: 3
- ARH 369 - Film and Video Theory Seminar Credits: 3
- ARH 493 - Medieval Research Seminar Credits: 3
- ARH 494 - Renaissance Research Seminar Credits: 3
- BUA 328 - Canadian/U.S. Business: A Comparison Credits: 3
- BUA 343 - Introduction to International Business Credits: 3
- CAN 101 - Introduction to Canadian Studies Credits: 3
- CHI 101 - Elementary Chinese I Credits: 5
- CHI 102 - Elementary Chinese II Credits: 5
- CLA 101 - Greek Literature in English Translation Credits: 3
- CLA 102 - Latin Literature in English Translation Credits: 3
- CLA 400 - Hero: Myth and Meaning Credits: 3
- CLA 401 - Amazons: Myth and Reality Credits: 3
- CMJ 314 - International Mass Communication Credits: 3
- CMJ 360 - Nonverbal Communication Credits: 3
- CMJ 366 - Speech Play and Performance Credits: 3
- CMJ 401 - Speech, Space, Event: Critical Applications Credits: 3
- CMJ 405 - Women and Communication Credits: 3
- CSD 222 - International and National Issues of Language Usage Credits: 3
- DIS 300 - Disability: Interaction of Human Diversity and Global Environment Credits: 3
- DIS 400 - Disability as Diversity I Credits: 3
- ECO 339 - International Finance Credits: 3
- ECO 340 - The Canadian Economy: Issues and Policies Credits: 3
- EHD 202 - Education in a Multicultural Society Credits: 3
- EHD 425 - Field Experience: Urban and Rural Education Credits: 3
- ENG 131 - The Nature of Story Credits: 3
- ENG 236 - Intro to Canadian Literature Credits: 3
- ENG 237 - Coming of Age in America Credits: 3
- ENG 243 - Topics in Multicultural Literature Credits: 3
- ENG 246 - American Women's Literature Credits: 3
- ENG 256 - British Women's Literature Credits: 3
- ENG 341 - Colonial and Early National American Literature Credits: 3



- ENG 342 - Native American Literature Credits: 3
- FAS 101 - Introduction to Franco American Studies Credits: 3
- FAS 230 - Franco American Women's Experience Credits: 3
- FAS 250 - Exile, Migrations and Communities Credits: 3
- FAS 442 - French Language of North America Credits: 3
- FRE 101 - Elementary French I Credits: 3 - 4
- FRE 102 - Elementary French II Credits: 3 - 4
- FRE 117 - Accelerated French I Credits: 6
- FRE 201 - Intermediate French I Credits: 3 - 4
- FRE 202 - Intermediate French II Credits: 3 - 4
- FRE 218 - Accelerated French II Credits: 6
- FRE 305 - French Conversation and Composition I Credits: 3
- FRE 306 - French Conversation and Composition II Credits: 3
- FRE 307 - French for Business Credits: 3
- FRE 309 - Readings in French Literature Credits: 3
- FRE 310 - Readings in Francophone Literature Credits: 3
- FRE 315 - Advanced French Conversation Credits: 3
- FRE 320 - French Pronunciation Credits: 3
- FRE 350 - Multidisciplinary Readings in French Credits: 1
- FRE 397 - French (May Term) Credits: 3
- FRE 398 - French Immersion: Western France Credits: 3
- FRE 400 - Advanced French Grammar Credits: 3
- FRE 401 - Translation and Comparative Stylistics Credits: 3
- FRE 406 - Eighteenth Century French Literature Credits: 3
- FRE 407 - 19th Century French Literature Credits: 3
- FRE 408 - Twentieth Century French Literature Credits: 3
- FRE 413 - Advanced Composition and Stylistics Credits: 3
- FRE 430 - French Film Survey Credits: 3
- FRE 442 - French Language of North America Credits: 3
- FRE 463 - Quebec Poetry Credits: 3
- FRE 464 - Quebec Theatre Credits: 3
- FRE 465 - North American French Novel Credits: 3
- FRE 490 - Advanced Topics in French Credits: 1-3
- FRE 495 - Senior Project in French Credits: 0-3
- FRE 498 - Independent Projects II Credits: 1-3
- FSN 270 - World Food and Nutrition Credits: 3
- GEE 250 - Sustainable Solutions in the Developing World Credits: 3
- GEO 100 - World Geography Credits: 3
- GEO 275 - Geography of Globalization Credits: 3
- GEO 349 - Early Modern North America in Atlantic Perspective Credits: 3
- GER 101 - Elementary German I Credits: 3 - 4
- GER 102 - Elementary German II Credits: 4
- GER 121 - Elementary German (Schnelldeutsch) Credits: 6
- GER 203 - Intermediate German I Credits: 3
- GER 204 - Intermediate German II Credits: 3 - 4
- GER 223 - Intermediate German (Schnelldeutsch) Credits: 6
- GER 305 - Practical German Credits: 3

- GER 306 - Readings in German Literature I Credits: 3
- GER 307 - German for the Professions Credits: 3
- GER 401 - Major Cultural Periods Credits: 3
- GER 402 - Contemporary Germany Credits: 3
- GER 490 - Topics in German Credits: 1-3
- GER 495 - Senior Project in German Credits: 1-3
- GER 497 - Projects in German I Credits: 1-3
- HTY 107 - East Asian Civilization I Credits: 3
- HTY 108 - India: Identities and Changes Credits: 3
- HTY 109 - Introduction to Early Latin America Credits: 3
- HTY 110 - Introduction to Modern Latin America Credits: 3
- HTY 112 - Introduction to Africa Credits: 3
- HTY 218 - History of Film Credits: 3
- HTY 220 - North American Indian History Credits: 3
- HTY 222 - Maine Indian History in the Twentieth Century Credits: 3
- HTY 240 - Creation of the Atlantic World, 1450-1888 Credits: 3
- HTY 241 - History of Globalization, 1900-Present Credits: 3
- HTY 275 - Geography of Globalization Credits: 3
- HTY 312 - Furs, Frontiers, and Fame: North American Exploration Credits: 3
- HTY 332 - Womanhood in America Credits: 3
- HTY 341 - The Making of Modern China Credits: 3
- HTY 349 - Early Modern North America in Atlantic Perspective Credits: 3
- HTY 350 - Nations in Latin America Credits: 3
- HTY 403 - Early Middle Ages Credits: 3
- HTY 405 - Early Modern Europe: Renaissance, Reformation and the Foundation of the Modern World-System Credits: 3
- HTY 408 - 19th Century Europe, 1815-1914 Credits: 3
- HTY 410 - 20th Century Europe II, Since 1945 Credits: 3
- HTY 411 - The Holocaust Credits: 3
- HTY 416 - The American South Credits: 3
- HTY 423 - History of Russia I Credits: 3
- HTY 424 - History of Russia II: The Russian Revolution, 1881-1991 Credits: 3
- HTY 426 - History of Modern Germany Credits: 3
- HTY 437 - History of Modern Japan Credits: 3
- HTY 442 - The United States and Vietnam: A History Credits: 3
- HTY 446 - History of Modern Middle East, 1800-Present Credits: 3
- HTY 449 - History of South Africa Credits: 3
- HTY 450 - History of the British Empire Credits: 3
- HTY 453 - History of Ireland I Credits: 3
- HTY 454 - History of Ireland II Credits: 3
- HTY 460 - Modern Canada Credits: 3
- HTY 473 - History of U.S. Foreign Relations I Credits: 3
- HTY 474 - History of U.S. Foreign Relations II Credits: 3
- HTY 477 - The American Worker Credits: 3
- HTY 483 - Violence in North American History Credits: 3
- HTY 484 - History of Jazz Credits: 3
- HTY 487 - The First World War Credits: 3
- HTY 494 - Women, History and American Society: Selected Topics Credits: 3

- INT 441 - (ANT, HTY, SMS) Maritime History and Archaeology of New England Credits: 3
- INT 490 - (University Wide) Lies, Deception and Heroification Credits: 3
- INT 491 - (University Wide) A Midwife's Tale and the Social Web Credits: 3
- LAT 203 - Readings in Latin Literature I Credits: 3
- LAT 204 - Readings in Latin Literature II Credits: 3
- LAT 452 - Roman Philosophical Thought Credits: 3
- LAT 453 - Poetry of the Republic and Early Empire Credits: 3
- LAT 454 - Prose of the Republic and of Early Empire Credits: 3
- LAT 497 - Projects in Latin I Credits: Ar
- LAT 498 - Projects in Latin II Credits: Ar
- MLC 175 - Multiculturalism in America Credits: 3
- MLC 190 - Topics in Modern Languages Credits: 3
- MLC 495 - Senior Project in Modern Languages Credits: 1-3
- MSL 302 - Applied Team Leadership Credits: 3
- MSL 402 - Mission Command and the Company Grade Officer Credits: 4
- MUL 120 - World Music Credits: 3
- NAS 101 - Introduction to Native American Studies Credits: 3
- NAS 102 - Introduction to Wabanaki Culture, History and Contemporary Issues Credits: 3
- NAS 230 - Maine Indian History in the Twentieth Century Credits: 3
- NAS 270 - Native American Women Credits: 3
- NAS 401 - Advanced Topics in Native American Studies Credits: 3
- NAV 310 - Evolution of Warfare Credits: 3
- NUR 415 - Socio-Cultural Issues in Health and Health Care Credits: 3
- NUR 452 - Community and Population Health Credits: 3
- PAX 201 - Introduction to Peace and Reconciliation Studies Credits: 3
- PAX 290 - Nonviolence: Perceptions and Perspectives Credits: 3
- PAX 350 - Buddhism, Peace and Contemplative Traditions Credits: 3
- PAX 370 - Building Sustainable Communities Credits: 3
- PAX 380 - Ecovillages and Ecocities: Models of Global Restoration Credits: 3
- PAX 400 - Martin Luther King and the Promise of Social Renewal Credits: 3
- PAX 401 - Women Social Activists: Warriors for Peace and Justice Credits: 3
- PAX 491 - Forgiveness: Creating a Culture of Peace and Reconciliation Credits: 3
- PHI 223 - Modern Jewish Thought Credits: 3
- PHI 236 - Feminist Ethical, Social and Political Theory Credits: 3
- PHI 286 - Religions and Philosophies of the East: Hinduism Credits: 3
- PHI 287 - Religions and Philosophies of the East: Buddhism Credits: 3
- PHI 317 - Existentialism and Phenomenology Credits: 3
- PHI 346 - The Philosophy of Mahatma Gandhi Credits: 3
- PHI 364 - Views of Self: East and West Credits: 3
- PHI 382 - Theories of Myth Credits: 3
- POS 120 - Introduction to World Politics Credits: 3
- POS 241 - Introduction to Comparative Politics Credits: 3
- POS 243 - Canadian Government and Politics Credits: 3
- POS 273 - International Relations Credits: 3
- POS 336 - Government and Politics in Russia Credits: 3
- POS 337 - Government and Politics in Eurasia Credits: 3
- POS 344 - Public Policy in Canada Credits: 3

- POS 368 - China Credits: 3
- POS 370 - International Terrorism: The Challenges for America Credits: 3
- POS 372 - Canadian Foreign Policy Credits: 3
- POS 374 - American Foreign Policy Credits: 3
- POS 384 - American Civil Liberties Credits: 3
- POS 467 - African Politics Credits: 3
- POS 475 - International Security Credits: 3
- PSY 423 - The Psychology of Parenting Credits: 3
- SFR 226 - Park Systems of the World Credits: 3
- SOC 201 - Social Inequality Credits: 3
- SOC 202 - Social Problems Credits: 3
- SOC 208 - Problems of Violence and Terrorism Credits: 3
- SOC 314 - Law and Society Credits: 3
- SOC 329 - Sociology of Gender Credits: 3
- SOC 330 - Perspectives on Women Credits: 3
- SOC 371 - Immigration, Women and Society Credits: 3
- SPA 101 - Elementary Spanish I Credits: 3 - 4
- SPA 102 - Elementary Spanish II Credits: 3 - 4
- SPA 117 - Accelerated Spanish I Credits: 6
- SPA 203 - Intermediate Spanish I Credits: 3 - 4
- SPA 204 - Intermediate Spanish II Credits: 3 - 4
- SPA 217 - Accelerated Spanish II Credits: 6
- SPA 301 - Introduction to Literary Theory Credits: 3
- SPA 305 - Applied Spanish Credits: 3
- SPA 306 - Workshop in Speaking and Writing Spanish Credits: 3
- SPA 307 - Readings in Peninsular Literature Credits: 3
- SPA 308 - Readings in Spanish American Literature Credits: 3
- SPA 309 - Spanish for the Professions Credits: 3
- SPA 310 - Contemporary Latin American Cultures Credits: 3
- SPA 350 - Multi-disciplinary Readings in Spanish Credits: 1
- SPA 401 - Golden Age Credits: 3
- SPA 403 - Cervantes Credits: 3
- SPA 405 - Spanish Literature of the Nineteenth Century Credits: 3
- SPA 406 - Spanish Literature of the Twentieth Century Credits: 3
- SPA 409 - Contemporary Latin-American Short Story Credits: 3
- SPA 410 - Latin American Novel Credits: 3
- SPA 411 - Contemporary Latin American Theater Credits: 3
- SPA 412 - Contemporary Peninsular Theater Credits: 3
- SPA 444 - Theory and Techniques of Translation Credits: 3
- SPA 490 - Topics and Individual Authors in Spanish Credits: 1-3
- SPA 495 - Senior Project in Spanish Credits: 0-3
- SPA 496 - Service Learning in Spanish Credits: 3
- SPA 497 - Projects in Spanish I Credits: 1-3
- SPA 498 - Projects in Spanish II Credits: 1-3
- SWK 330 - Contemporary Issues in Diversity and Pluralism Credits: 3
- THE 300 - Introduction to Performance Studies Credits: 3
- THE 460 - Theatre History Credits: 3

- VOX 100 - Beginning Spoken Arabic I Credits: 3
- VOX 101 - Beginning Spoken Chinese I Credits: 3
- VOX 102 - Beginning Spoken Farsi I Credits: 3
- VOX 103 - Beginning Spoken Hebrew I Credits: 3
- VOX 104 - Beginning Spoken Hindi I Credits: 3
- VOX 105 - Beginning Spoken Irish Gaelic I Credits: 3
- VOX 106 - Beginning Spoken Italian I Credits: 3
- VOX 107 - Beginning Spoken Japanese I Credits: 3
- VOX 108 - Beginning Spoken Korean I Credits: 3
- VOX 109 - Beginning Spoken Portuguese I Credits: 3
- VOX 110 - Beginning Spoken Russian I Credits: 3
- VOX 111 - Beginning Spoken Turkish I Credits: 3
- VOX 130 - Beginning Spoken Arabic II Credits: 3
- VOX 131 - Beginning Spoken Chinese II Credits: 3
- VOX 132 - Beginning Spoken Farsi II Credits: 3
- VOX 133 - Beginning Spoken Hebrew II Credits: 3
- VOX 134 - Beginning Spoken Hindi II Credits: 3
- VOX 135 - Beginning Spoken Irish Gaelic II Credits: 3
- VOX 136 - Beginning Spoken Italian II Credits: 3
- VOX 137 - Beginning Spoken Japanese II Credits: 3
- VOX 138 - Beginning Spoken Korean II Credits: 3
- VOX 139 - Beginning Spoken Portuguese II Credits: 3
- VOX 140 - Beginning Spoken Russian II Credits: 3
- VOX 141 - Beginning Spoken Turkish II Credits: 3
- VOX 160 - Beginning Spoken Arabic III Credits: 3
- VOX 161 - Beginning Spoken Chinese III Credits: 3
- VOX 167 - Beginning Spoken Japanese III Credits: 3
- VOX 168 - Beginning Spoken Korean III Credits: 3
- VOX 190 - Critical Languages (Other) Credits: 3
- VOX 205 - Intermediate Spoken Irish Gaelic I Credits: 3
- VOX 206 - Intermediate Spoken Italian I Credits: 3
- VOX 207 - Intermediate Spoken Japanese I Credits: 3
- VOX 208 - Intermediate Spoken Korean I Credits: 3
- VOX 209 - Intermediate Spoken Portuguese I Credits: 3
- VOX 210 - Intermediate Spoken Russian I Credits: 3
- VOX 240 - Intermediate Spoken Russian II Credits: 3
- VOX 270 - Intermediate Spoken Russian III Credits: 3
- VOX 290 - Intermediate Critical Languages (Other) Credits: 3
- WGS 101 - Women's, Gender and Sexuality Studies Credits: 3
- WGS 103 - Introduction to Lesbian, Gay, Bisexual, and Transgender Studies Credits: 3
- WGS 235 - Franco American Women's Experience Credits: 3
- WGS 270 - Native American Women Credits: 3
- WGS 250 - Women and Music Credits: 3
- WGS 340 - Transnational Feminisms Credits: 3
- WGS 360 - Feminism and Cinema Credits: 3
- WGS 371 - Immigration, Women and Society Credits: 3
- WGS 480 - Senior Seminar in Women's, Gender, and Sexuality Studies Credits: 3

## 4. Population and the Environment

**Important Note:** Students taking any of the courses listed below with an asterisk must meet specific requirements to earn this General Education Requirement. View the full course descriptions to learn specifically how these courses award this General Education Requirement.

- ANT 212 - The Anthropology of Food Credits: 3
- ANT 225 - Climate Change, Societies and Cultures Credits: 3
- ANT 235 - Cultural Perceptions of Nature Credits: 3
- ANT 250 - Conservation Anthropology: The Socio-Cultural Dimension of Environmental Issues Credits: 3
- ANT 420 - Human Impacts on Ancient Environments Credits: 3
- ANT 431 - Folklore, the Environment and Public Policy Credits: 3
- ANT 464 - Ecological Anthropology Credits: 3
- ANT 475 - Environmental Archaeology Credits: 3
- ANT 480 - Andean Prehistory Credits: 3
- AVS 152 - History of Infectious Disease and Public Health Credits: 3
- BIO 222 - Biology: The Living Science Credits: 3
- BIO 342 - Plants in Our World Credits: 3
- BIO 455 - Biological Invasions Credits: 4
- BMB 110 - Plagues Past and Present Credits: 3
- CET 412 - Sustainable Population and Environmental Design and Construction Credits: 3
- CIE 210 - Sustainability in Engineering Credits: 3
- CMJ 107 - Communication and the Environment Credits: 3
- DIS 300 - Disability: Interaction of Human Diversity and Global Environment Credits: 3
- DIS 450 - Disability: Population-Environment Diversity Credits: 3
- ECO 180 - Citizens, Energy & Sustainability Credits: 3
- ECO 190 - World Food Supply, Population and the Environment Credits: 3
- ECO 377 - Introduction to Natural Resource Economics and Policy Credits: 3
- ECO 381 - Sustainable Development Principles and Policy Credits: 3
- ECO 405 - Sustainable Energy Economics & Policy Credits: 3
- ECO 477 - Economics of Environmental and Resource Management Credits: 3
- EES 100 - Human Population and the Global Environment Credits: 3
- EES 324 - Environmental Protection Law and Policy Credits: 3
- EES 450 - Principles of Environmental Science Credits: 3
- ERS 102 - Environmental Geology of Maine Credits: 4
- ERS 103 - Dynamic Earth Credits: 3
- ERS 108 - Beaches and Coasts Credits: 3
- ERS 121 - Humans and Global Change Credits: 3
- ERS 191 - Energy in the Earth System Credits: 3
- ERS 201 - Global Environmental Change Credits: 4
- ERS 210 - Geology Applied to Engineering Credits: 3
- ERS 323 - Extreme Weather Credits: 3
- ERS 441 - Glaciers and Our Landscape Credits: 3
- FAS 120 - People, Places and Pasts Credits: 3
- FAS 240 - French Exploration and Settlement of Maine, 1604-1760 Credits: 3
- FSN 270 - World Food and Nutrition Credits: 3
- GEE 250 - Sustainable Solutions in the Developing World Credits: 3

- GEO 100 - World Geography Credits: 3
- GEO 212 - Geography of Maine Credits: 3
- GEO 275 - Geography of Globalization Credits: 3
- HTY 212 - Geography of Maine Credits: 3
- HTY 213 - History of the Maine Woods Credits: 3
- HTY 222 - Maine Indian History in the Twentieth Century Credits: 3
- HTY 275 - Geography of Globalization Credits: 3
- HTY 404 - Late Middle Ages Credits: 3
- HTY 465 - American Landscapes, 1600-1850 Credits: 3
- HTY 479 - U.S. Environmental History Credits: 3
- INT 105 - (ECO, REP) Environmental Policy Credits: 3
- INT 302 - Foundations of Universal Design: The Ecology of Human Environments Credits: 3
- INT 400 - (University Wide) Pop!Tech: The Impact of Technology on Society Credits: 3
- MES 101 - Introduction to Maine Studies Credits: 3
- MES 201 - The Maine Coast Credits: 3
- MES 301 - Rachel Carson, Maine, and the Environment Credits: 3
- NAS 230 - Maine Indian History in the Twentieth Century Credits: 3
- NUR 452 - Community and Population Health Credits: 3
- PAX 380 - Ecovillages and Ecocities: Models of Global Restoration Credits: 3
- PHI 232 - Environmental Ethics Credits: 3
- PHI 432 - Environmental Philosophy and Policy Credits: 3
- PSE 105 - Principles of Sustainable Agriculture Credits: 3
- PSE 121 - Human Societies, Soil and Water: The Unbreakable Link Credits: 3
- \* SFR 111 - Forest Through Time Credits: 1
- \* SFR 112 - Forests Through Time: Discussions Credits: 2
- SFR 220 - Environment and Society Credits: 3
- SFR 455 - Bioenergy Sources, Systems and Environmental Effects Credits: 3
- SMS 100 - Introduction to Ocean Science Credits: 3
- SMS 108 - Beaches and Coasts Credits: 3
- SMS 230 - Introduction to Marine Policy and Fisheries Management Credits: 3
- SMS 482 - Semester-by-the-Sea: Human Impacts on the Ocean Credits: 3
- SOC 371 - Immigration, Women and Society Credits: 3
- WGS 230 - Women, Health, and the Environment Credits: 3
- WGS 371 - Immigration, Women and Society Credits: 3
- WLE 230 - Introduction to Wildlife Conservation Credits: 3
- WLE 323 - Introduction to Conservation Biology Credits: 3

## 5. Artistic and Creative Expression

- ARH 100 - Art and Human Experience Credits: 3
- ARH 155 - Art and Visual Culture in the Ancient and Medieval Worlds Credits: 3
- ARH 156 - Art and Visual Culture in the Modern Era Credits: 3
- ARH 251 - Classical Art and Architecture Credits: 3
- ARH 252 - Mediterranean Medieval Art and Architecture Credits: 3
- ARH 255 - Italian Renaissance Art Credits: 3

- ARH 257 - Northern Renaissance Art Credits: 3
- ARH 258 - Baroque Art and Architecture Credits: 3
- ARH 261 - Nineteenth-Century European Art Credits: 3
- ARH 264 - Themes and Issues in Contemporary Art Credits: 3
- ARH 265 - American Art Credits: 3
- ARH 270 - Topical Survey in History of Art Credits: 3
- ARH 362 - Medieval Art and Architecture Seminar Credits: 3
- ARH 363 - Renaissance Art and Architecture Seminar Credits: 3
- ARH 369 - Film and Video Theory Seminar Credits: 3
- ARH 492 - Baroque Research Seminar Credits: 3
- ARH 493 - Medieval Research Seminar Credits: 3
- ARH 494 - Renaissance Research Seminar Credits: 3
- ART 100 - Drawing I Credits: 3
- ART 110 - 2-D Design Credits: 3
- ART 120 - 3-D Design Credits: 3
- ART 225 - Ceramics I Credits: 3
- ART 270 - Digital Art I Credits: 3
- ART 325 - Ceramics II Credits: 3
- ART 370 - Digital Art IIA: 3D Modeling and Animation Credits: 3
- ART 372 - Digital Art IIC: Interactivity Credits: 3
- CMJ 106 - Storytelling Credits: 3
- CMJ 261 - Photographic Reporting and Storytelling Credits: 3
- CMJ 351 - Multimedia Production Credits: 4
- CMJ 366 - Speech Play and Performance Credits: 3
- CMJ 434 - Editorial and Opinion Writing Credits: 3
- CMJ 466 - Narrative and Communication Credits: 3
- DAN 101 - Beginner Modern Dance I Credits: 2
- DAN 102 - Beginner Ballet I Credits: 2
- DAN 103 - Beginner Jazz I Credits: 2
- DAN 105 - Beginner Tap Credits: 2
- DAN 121 - Beginner Modern Dance II Credits: 2
- DAN 122 - Beginner Ballet II Credits: 2
- DAN 123 - Beginner Jazz II Credits: 2
- DAN 130 - Ballroom and World Dance Forms Credits: 2
- DAN 205 - Intermediate Tap Credits: 2
- DAN 297 - Introductory Topics in Dance Credits: 2
- DAN 397 - Intermediate Topics in Dance Credits: 2
- DAN 497 - Advanced Topics in Dance Credits: 2
- ENG 131 - The Nature of Story Credits: 3
- ENG 205 - An Introduction to Creative Writing Credits: 3
- ENG 206 - Descriptive and Narrative Writing Credits: 3
- ENG 222 - Reading Poems Credits: 3
- ENG 231 - Western Tradition in Literature: Homer Through the Renaissance Credits: 3
- ENG 235 - Literature and the Modern World Credits: 3
- ENG 236 - Intro to Canadian Literature Credits: 3
- ENG 244 - Writers of Maine Credits: 3
- ENG 245 - American Short Fiction Credits: 3



- ENG 246 - American Women's Literature Credits: 3
- ENG 249 - American Sports Literature and Film Credits: 3
- ENG 251 - English Literature Survey: Beginnings Through Neoclassicism Credits: 3
- ENG 253 - Shakespeare: Selected Plays Credits: 3
- ENG 256 - British Women's Literature Credits: 3
- ENG 280 - Introduction to Film Credits: 3
- ENG 309 - Writing Creative Nonfiction Credits: 3
- FRE 430 - French Film Survey Credits: 3
- FRE 463 - Quebec Poetry Credits: 3
- FRE 464 - Quebec Theatre Credits: 3
- GER 413 - German Literature and Culture, 1900 to 1945 Credits: 3
- GER 420 - German Film Credits: 3
- HON 180 - A Cultural Odyssey Credits: 1
- HON 309 - The Honors Read Tutorial Credits: 3
- HTY 484 - History of Jazz Credits: 3
- MLC 231 - Western Tradition in Literature: Homer Through the Renaissance Credits: 3
- MLC 421 - World Cinema: Multiple Perspectives on Identity and Culture Credits: 3
- MUL 101 - The Art of Listening to Music: Elements Credits: 3
- MUL 150 - Rock'n Roll and other 20th Century Music Credits: 3
- MUO 101 - University Singers Credits: 0-1
- MUO 103 - Oratorio Society Credits: 0-1
- MUO 109 - Collegiate Chorale Credits: 0-1
- MUO 111 - Marching Band Credits: 0-1
- MUO 112 - Concert Band Credits: 0-1
- MUO 113 - Pep Band Credits: 0-1
- MUO 114 - Symphonic Band Credits: 0-1
- MUO 121 - University Orchestra Credits: 0-1
- MUO 132 - Opera Workshop Credits: 0-1
- MUO 141 - Brass Ensemble Credits: 0-1
- MUO 143 - UMAINE Jazz Ensemble Credits: 0-1
- MUO 149 - Chamber Music Credits: 0-1
- MUO 150 - Percussion Ensemble Credits: 0-1
- MUO 155 - Chamber Jazz Ensemble Credits: 0-1
- MUO 160 - Black Bear Men's Chorus Credits: 0-1
- MUO 165 - Athena Consort Credits: 0-1
- MUS 201 - Applied Music Lessons Credits: 1
- MUS 210 - Applied Music Lessons Credits: 2
- MUS 298 - Special Subjects in Music Credits: 1-3
- MUY 101 - Fundamentals of Music Credits: 3
- MUY 310 - Jazz Improvisation I Credits: 3
- NMD 104 - Design Basics for New Media Credits: 3
- NMD 240 - Introduction to Web Concepts and Design Credits: 3
- NMD 250 - Electronic Music Composition I: Item and Arrangement Credits: 3
- NMD 270 - Digital Art I Credits: 3
- NMD 341 - Photographic Reporting and Storytelling Credits: 3
- NMD 370 - Digital Art IIA: 3D Modeling and Animation Credits: 3
- PAX 250 - Peace and Pop Culture Credits: 3

- PHI 104 - Existentialism and Literature Credits: 3
- PHI 262 - Philosophy of Art Credits: 3
- PHI 351 - Topics in Philosophy and Literature Credits: 3
- PHI 431 - Advanced Topics in the Philosophy of Art Credits: 3
- POS 355 - Music and Politics in the American Context Credits: 3
- POS 357 - Film and Politics Credits: 3
- SPA 420 - Spanish Film Credits: 3
- THE 111 - Introduction to Theatre Credits: 3
- THE 117 - Fundamentals of Acting Credits: 3
- THE 118 - Stage Makeup Credits: 3
- THE 200 - Design for Performance Credits: 3
- THE 216 - Play Production Credits: 3
- THE 340 - Playwriting, Directing and Performing Laboratory Credits: 3
- THE 415 - Capstone Experience in Theatre Credits: 1
- WGS 250 - Women and Music Credits: 3
- WGS 360 - Feminism and Cinema Credits: 3

## Quantitative Literacy

Students must complete at least six credit hours in Quantitative Literacy courses. Quantitative literacy is the ability to formulate, evaluate, and communicate conclusions and inferences from quantitative information through problems and analysis inside and outside the major.

**Important Note:** Students taking any of the courses listed below with an asterisk must meet specific requirements to earn this General Education Requirement. View the full course descriptions to learn specifically how these courses award this General Education Requirement.

- ANT 462 - Numerical Methods in Anthropology Credits: 3
- CMJ 402 - Communication Research Credits: 3
- COS 120 - Introduction to Programming I Credits: 3
- COS 125 - Introduction to Problem Solving Using Computer Programming Credits: 3
- COS 215 - Introduction to Computing Using FORTRAN Credits: 3
- COS 220 - Introduction to C++ Programming Credits: 3
- COS 225 - Object-Oriented Design, Programming and Data Structures Credits: 4
- COS 226 - Introduction to Data Structures Credits: 3
- ECO 480 - Introduction to Mathematical Economics Credits: 3
- ECO 485 - Introduction to Economic Statistics and Econometrics Credits: 3 - 4
- ERS 323 - Extreme Weather Credits: 3
- IEN 130 - Intergrated Engineering II Credits: 9
- IEN 230 - Integrated Engineering IV Credits: 5
- INV 392 - Commercialize: Innovation Engineering III Credits: 3
- KPE 372 - Statistical Methods and Assessments in Physical Education Credits: 3
- MAT 101 - The Nature and Language of Mathematics Credits: 3
- MAT 103 - Elementary Algebraic Models in Our World Credits: 3
- MAT 107 - Elementary Descriptive Geometry Credits: 3
- MAT 108 - Elementary Numerical Mathematics From A Modern Perspective Credits: 3
- MAT 111 - Algebra for College Mathematics Credits: 3

- MAT 115 - Applied Mathematics for Business and Economics Credits: 3
- MAT 122 - Pre-Calculus Credits: 4
- MAT 126 - Calculus I Credits: 4
- MAT 127 - Calculus II Credits: 4
- \* NUR 200 - Care of Adults I Credits: 3
- \* NUR 201 - Care of Adults I Clinical Credits: 1
- NUR 301 - Care of Adults II Credits: 3
- NUR 302 - Application of Theory to Nursing Practice II Credits: 1
- PHI 250 - Formal Logic Credits: 3
- PSY 241 - Statistics in Psychology Credits: 4
- SFR 205 - Forest Measurements and Statistics Credits: 3
- SOC 310 - Quantitative Reasoning in Sociology Credits: 3
- STS 215 - Introduction to Statistics for Business and Economics Credits: 3
- STS 232 - Principles of Statistical Inference Credits: 3
- TME 152 - Introductory Calculus for Engineering Technology Credits: 3
- WLE 220 - Introduction to Ecological Statistics Credits: 4

## Writing Competency

The ability to write well is one of the most important attributes of an educated person. To help ensure this outcome the University requires its students to write throughout their academic careers, focusing both on general-purpose writing and professional writing within their majors. Students must complete:

1. ENG 101, College Composition: All students must complete this course with a grade of C or better, or be excused from this course on the basis of a placement exam or completion of HON 111 and HON 112 with a grade of C or better in each or completion of ENG 100 and ENG 106 with a grade of C or better in each
2. At least two courses designated as writing-intensive, at least one of which must be within the academic major.

## Writing Intensive

**Important Note:** Students taking any of the courses listed below with an asterisk must meet specific requirements to earn this General Education Requirement. View the full course descriptions to learn specifically how these courses award this General Education Requirement.

- AED 372 - Foundations of Art Education Credits: 3
- ANT 261 - Islamic Fundamentalism Credits: 3
- ANT 300 - Basic Theory in Cultural Anthropology Credits: 3
- ANT 421 - Inca Society and Peasants of the Andes Credits: 3
- ANT 454 - Cultures and Societies of the Middle East Credits: 3
- ANT 464 - Ecological Anthropology Credits: 3
- ANT 470 - Religion and Politics Credits: 3
- ANT 476 - The Ancient Maya Credits: 3
- ARH 451 - Art Theory and Criticism Credits: 3
- ARH 361 - Topics in Art History Credits: 3
- ARH 362 - Medieval Art and Architecture Seminar Credits: 3
- ARH 363 - Renaissance Art and Architecture Seminar Credits: 3
- ARH 369 - Film and Video Theory Seminar Credits: 3
- ARH 452 - Critical Methods in History of Art Credits: 3

- ARH 466 - Twentieth Century Art and Architecture Seminar Credits: 3
- ARH 492 - Baroque Research Seminar Credits: 3
- ARH 493 - Medieval Research Seminar Credits: 3
- ARH 494 - Renaissance Research Seminar Credits: 3
- ARH 495 - Modern/Post-Modern Seminar Credits: 3
- ART 499 - Studio Art Senior Capstone Credits: 3
- \* AVS 401 - Senior Paper in Animal Science I Credits: 2
- \* AVS 402 - Senior Paper in Animal Science II Credits: 2
- BIO 387 - Undergraduate Research in Biology Credits: 1-6
- \* BIO 388 - Research Capstone in Biology Credits: 1-3
- BIO 391 - Undergraduate Independent Study in Biology Credits: 1-6
- \* BIO 392 - Independent Study Capstone in Biology Credits: 1-3
- BIO 400 - Biological Sciences Writing Intensive Credits: 1-2
- BIO 402 - Capstone Experience in Biological Sciences Credits: 3
- BIO 422 - Clinical Hematology Credits: 7
- BIO 423 - Clinical Microbiology Credits: 7
- BIO 424 - Clinical Immunohematology Credits: 7
- BIO 425 - Clinical Chemistry Credits: 7
- BIO 426 - Clinical Microscopy and Special Topics Credits: 4
- BIO 438 - Morphogenesis in Development and Disease Credits: 3
- BIO 447 - Experimental Ecology Credits: 4
- BIO 450 - Histology Credits: 4
- BIO 463 - River Ecology Credits: 4
- BLE 492 - Design Project Credits: Ar
- BMB 460 - Advanced Biochemistry Credits: 3
- BMB 464 - Analytical and Preparative Biochemical Laboratory Methods Credits: 4
- BMB 490 - Microbial Genetics Credits: 5
- BUA 468 - Electronic Business Credits: 3
- BUA 302 - Intermediate Accounting II Credits: 3
- BUA 310 - Auditing Credits: 3
- BUA 330 - Human Resource Management Credits: 3
- BUA 351 - Valuation and Corporate Investment Decisions Credits: 3
- BUA 378 - Marketing Research Credits: 3
- BUA 480 - Managerial Marketing Credits: 3
- CET 356 - Construction Documents and Administration Credits: 3
- CET 451 - Construction Law Credits: 3
- CHB 361 - Chemical Engineering and Bioengineering Laboratory I Credits: 3
- CHB 363 - Chemical Engineering and Bioengineering Laboratory II Credits: 3
- CHF 321 - Curriculum and Methods for Teaching Young Children Science Credits: 3
- CHF 322 - Curriculum and Methods for Teaching Social Studies Credits: 3
- CHF 423 - Professional Seminar in Child Development and Family Relations Credits: 3
- CHF 424 - Professional Seminar for Early Childhood Specialists Credits: 3
- CHF 433 - Adolescence Credits: 3
- CHY 393 - Undergraduate Seminar in Chemistry Credits: 3
- \* CIE 225 - Transportation Engineering Credits: 3
- CIE 331 - Fundamentals of Environmental Engineering Credits: 3
- CIE 366 - Soil Mechanics Laboratory Credits: 1

- \* CIE 413 - Project Management Credits: 2
- CLA 101 - Greek Literature in English Translation Credits: 3
- CLA 102 - Latin Literature in English Translation Credits: 3
- CMJ 236 - Journalism Writing and Editing Credits: 3
- CMJ 237 - Journalism Across Platforms Credits: 4
- CMJ 332 - Public Affairs Reporting and Research Credits: 3
- CMJ 347 - Argument and Critical Thinking Credits: 3
- CMJ 355 - Advertising Copy and Graphics Credits: 3
- CMJ 401 - Speech, Space, Event: Critical Applications Credits: 3
- CMJ 402 - Communication Research Credits: 3
- CMJ 466 - Narrative and Communication Credits: 3
- CMJ 470 - Communication in Organizations Credits: 3
- CMJ 483 - Capstone Seminar in Mass Communication Credits: 3
- COS 301 - Programming Languages Credits: 3
- \* COS 397 - Computer Science Capstone 1 Credits: 3
- COS 490 - Computers, Ethics and Society Credits: 3
- \* COS 497 - Computer Science Capstone 2 Credits: 3
- CSD 490 - Senior Capstone: The Research Process Credits: 3
- \* ECE 214 - Electrical Circuits Laboratory Credits: 2
- \* ECE 342 - Electronics I Credits: 4
- ECE 401 - Electrical Engineering Design Project Credits: 1
- ECE 403 - Electrical and Computer Engineering Design Project Credits: 2
- \* ECO 470 - Topics in Economics Credits: 1-3
- ECO 475 - Industrial Organization Credits: 3
- ECO 485 - Introduction to Economic Statistics and Econometrics Credits: 3 - 4
- ECO 489 - Senior Seminar Credits: 3
- ECP 101 - Technical Writing for Mechanical Engineers I Credits: 1
- \* ECP 214 - Technical Writing Workshop for Electrical Networks I Credits: 1
- \* ECP 225 - Civil Engineering Technical Writing I Credits: 1
- ECP 341 - Technical Writing for Mechanical Engineers I Credits: 1
- \* ECP 342 - Technical Writing Workshop for Electrical Networks II Credits: 1
- ECP 403 - Technical Writing Workshop for Electrical and Computer Engineering Design Project Credits: 1
- ECP 411 - Civil Engineering Technical Writing III Credits: 1
- \* ECP 413 - Civil Engineering Technical Writing II Credits: 1
- ECP 487 - Technical Writing for Mechanical Engineers II Credits: 1
- ECP 488 - Technical Writing for Mechanical Engineers III Credits: 1
- EES 490 - Senior Seminar Credits: 3
- EET 100 - Introduction to Electrical Engineering Technology Credits: 3
- EET 452 - Senior Design Project III Credits: 2
- EHD 101 - The Art and Science of Teaching Credits: 3
- EHD 202 - Education in a Multicultural Society Credits: 3
- ENG 129 - Topics in English Credits: 3
- ENG 170 - Foundations of Literary Analysis Credits: 3
- ENG 205 - An Introduction to Creative Writing Credits: 3
- ENG 206 - Descriptive and Narrative Writing Credits: 3
- ENG 212 - Persuasive and Analytical Writing Credits: 3
- ENG 222 - Reading Poems Credits: 3

- ENG 271 - The Act of Interpretation Credits: 3
- ENG 301 - Advanced Composition Credits: 3
- ENG 307 - Writing Fiction Credits: 3
- ENG 308 - Writing Poetry Credits: 3
- ENG 309 - Writing Creative Nonfiction Credits: 3
- ENG 315 - Research Writing in the Disciplines Credits: 3
- ENG 317 - Business and Technical Writing Credits: 3
- ENG 336 - Canadian Literature Credits: 3
- ENG 395 - English Internship Credits: 3
- ENG 402 - Topics in Writing and Research Credits: 3
- ENG 405 - Topics in Creative Writing Credits: 3
- ENG 415 - Advanced Report & Proposal Writing Credits: 3
- ENG 416 - Technical Editing & Document Design Credits: 3
- ENG 418 - Topics in Professional Writing Credits: 3
- ENG 440 - American Seminar Credits: 3
- ENG 445 - The American Novel Credits: 3
- ENG 459 - British Seminar Credits: 3
- ENG 460 - Major Authors Credits: 3
- ENG 470 - Topics in Literary Theory and Criticism Credits: 3
- ENG 471 - Literature, Gender, and Gender Theory Credits: 3
- ENG 490 - Research Seminar in Literature Credits: 3
- ERS 200 - Earth Systems Credits: 4
- ERS 315 - Principles of Sedimentology and Stratigraphy Credits: 4
- ERS 316 - Structural Geology Credits: 4
- ERS 441 - Glaciers and Our Landscape Credits: 3
- ESC 316 - Teaching Science in the Elementary School (K-8) Credits: 3
- ESC 452 - Teaching Science in the Secondary School Credits: 3
- FAS 270 - Immigration, Yesterday and Today Credits: 3
- FRE 305 - French Conversation and Composition I Credits: 3
- FRE 306 - French Conversation and Composition II Credits: 3
- FRE 401 - Translation and Comparative Stylistics Credits: 3
- FRE 413 - Advanced Composition and Stylistics Credits: 3
- FSN 301 - Life Cycle Nutrition Credits: 3
- FSN 425 - Contemporary Issues in the Food Industry Credits: 1
- FSN 436 - Food Law Credits: 3
- FSN 489 - Senior Project in Food Science and Human Nutrition Credits: Ar
- GER 305 - Practical German Credits: 3
- GER 307 - German for the Professions Credits: 3
- HON 211 - Civilizations: Past, Present and Future III Credits: 4
- HON 212 - Civilizations: Past, Present and Future IV Credits: 4
- HON 499 - Honors Thesis Credits: 3
- HTY 311 - Research Seminar Credits: 3
- HTY 405 - Early Modern Europe: Renaissance, Reformation and the Foundation of the Modern World-System Credits: 3
- HTY 461 - Colonial British America to 1763 Credits: 3
- HTY 494 - Women, History and American Society: Selected Topics Credits: 3
- HTY 498 - Senior Seminar in History Credits: 3
- INT 333 - (University Wide) Why Do We Believe the Things We Do? Credits: 3

- INV 282 - Communicate: Innovation Engineering II Credits: 3
- KPE 271 - History and Philosophy of Kinesiology and Physical Education Credits: 3
- KPE 383 - Organization and Administration in Athletic Training Credits: 3
- KPE 425 - Health Promotion and Disease Prevention Credits: 3
- LAS 497 - Independent Study: Capstone for Bachelor of University Studies Credits: 3
- LDR 200 - Leadership Ethics Credits: 3
- MAT 261 - Introduction to Abstract Mathematics Credits: 3
- MEE 341 - Mechanical Laboratory I Credits: 3
- MES 101 - Introduction to Maine Studies Credits: 3
- MES 201 - The Maine Coast Credits: 3
- MES 301 - Rachel Carson, Maine, and the Environment Credits: 3
- MET 234 - Mechanical Technology Laboratory I Credits: 3
- MSL 401 - Mission Command and the Army Profession Credits: 4
- MUH 201 - History of Western Music I Credits: 2
- MUL 200 - Music Literature Laboratory Credits: 1
- NMD 498 - Practicum in New Media I Credits: 3
- NUR 200 - Care of Adults I Credits: 3
- NUR 301 - Care of Adults II Credits: 3
- NUR 304 - Concepts in Nursing for the Practitioner Credits: 3
- NUR 411 - RN Senior Seminar Credits: 4
- PAX 250 - Peace and Pop Culture Credits: 3
- PAX 260 - Realistic Pacifism Credits: 3
- PHI 344 - Theories of Justice Credits: 3
- PHI 346 - The Philosophy of Mahatma Gandhi Credits: 3
- PHI 364 - Views of Self: East and West Credits: 3
- PHI 382 - Theories of Myth Credits: 3
- PHI 432 - Environmental Philosophy and Policy Credits: 3
- PHI 475 - Junior/Senior Philosophy Seminar Credits: 3
- PHY 441 - Physical Electronics Laboratory Credits: 2
- PHY 442 - Modern Experimental Physics Credits: 2
- POS 301 - Classical Political Thought Credits: 3
- POS 302 - Medieval Political Thought Credits: 3
- POS 303 - Early Modern Political Thought Credits: 3
- POS 304 - American Political Thought Credits: 3
- POS 305 - Late Modern Political Thought Credits: 3
- POS 385 - Women and Politics Credits: 3
- POS 401 - Seminar in Political Theory Credits: 3
- POS 467 - African Politics Credits: 3
- POS 486 - Religious Thought, the American Identity, and U.S. Public Policy Credits: 3
- POS 487 - SL: Practicum in Engaged Policy Studies I Credits: 3
- POS 488 - Practicum in Engaged Policy Studies II Credits: 3
- POS 499 - Senior Seminar in Political Science Credits: 3
- PSE 101 - Cropping Systems Credits: 4
- PSE 410 - Plant Propagation Credits: 4
- PSE 425 - Landscape Management Credits: 3
- PSE 430 - Environmental Horticulture Credits: 3
- PSY 423 - The Psychology of Parenting Credits: 3

- PSY 491 - Senior Seminar in Psychology Credits: 3
- \* PSY 494 - Senior Research Project Credits: 1-3
- SFR 101 - Introduction to Forest Resources Credits: 1
- SFR 225 - Readings in Outdoor Recreation Credits: 3
- SFR 457 - Tree Pests and Disease Credits: 3
- SFR 476 - Forest Management I Credits: 3
- SFR 491 - Senior Capstone in Parks, Recreation and Tourism Credits: 3
- SFR 492 - Capstone Directed Study Credits: 3
- SFR 493 - Sustainable Tourism Planning Credits: 3
- \* SFR 498 - Senior Research I Credits: 2
- \* SFR 499 - Senior Research II Credits: 2
- SMS 203 - Introduction to Integrative Marine Science Credits: 1
- \* SMS 400 - Capstone Research Experience in Marine Science Credits: 1-4
- \* SMS 404 - Capstone Seminar in Marine Science Credits: 1
- SOC 390 - Logic of Sociological Inquiry Credits: 3
- SPA 305 - Applied Spanish Credits: 3
- SPA 306 - Workshop in Speaking and Writing Spanish Credits: 3
- SPA 307 - Readings in Peninsular Literature Credits: 3
- SPA 309 - Spanish for the Professions Credits: 3
- SPA 444 - Theory and Techniques of Translation Credits: 3
- SVT 221 - Boundary Law Credits: 3
- SVT 475 - Small Business Management Credits: 3
- SWK 440 - Social Welfare Policy and Issues Credits: 3
- THE 300 - Introduction to Performance Studies Credits: 3
- THE 340 - Playwriting, Directing and Performing Laboratory Credits: 3
- THE 460 - Theatre History Credits: 3
- UST 300 - Core Course in University Studies Credits: 3
- WGS 480 - Senior Seminar in Women's, Gender, and Sexuality Studies Credits: 3
- WLE 201 - Ecology Laboratory Credits: 3
- WLE 410 - Wildlife Population Dynamics and Conservation Credits: 3
- WLE 450 - Wildlife-Habitat Relationships Credits: 3
- WLE 455 - Wildlife-Habitat Evaluation Credits: 2

## Ethics

Students must complete at least one approved course or series of courses placing substantial emphasis on the discussion of ethical issues.

**Important Note:** Students taking any of the courses listed below with an asterisk must meet specific requirements to earn this General Education Requirement. View the full course descriptions to learn specifically how these courses award this General Education Requirement.

- ANT 102 - Introduction to Anthropology: Diversity of Cultures Credits: 3
- ANT 245 - Sex and Gender in Cross-Cultural Perspective Credits: 3
- ANT 249 - Religion and Violence Credits: 3
- ANT 425 - Recorded Interviewing Techniques and Methods Credits: 3
- ANT 448 - Ethnography Through Film Credits: 3



- \* AVS 145 - Animal Science Credits: 4
- AVS 150 - History of the Human-Animal Relationship Credits: 3
- \* AVS 249 - Laboratory and Companion Animal Science Credits: 2
- \* AVS 346 - Dairy Cattle Technology Credits: 3
- \* AVS 349 - Livestock Management Credits: 3
- \* BUA 220 - The Legal Environment of Business Credits: 3
- \* BUA 449 - Strategic Management Credits: 3
- \* CHB 111 - Introduction to Chemical Engineering and Bioengineering I Credits: 2
- \* CHB 477 - Elements of Chemical Engineering and Bioengineering Design Credits: 3
- \* CHB 479 - Chemical Engineering and Bioengineering Design Projects Credits: 4
- \* CHB 493 - Chemical Engineering and Bioengineering Seminar Credits: 0-1
- CHF 351 - Human Sexuality Credits: 3
- CHF 452 - Violence in the Family Credits: 3
- CIE 210 - Sustainability in Engineering Credits: 3
- CIE 410 - Engineering Ethics Credits: 1
- CMJ 489 - Seminar in Media Ethics and Issues Credits: 3
- COS 490 - Computers, Ethics and Society Credits: 3
- DIS 400 - Disability as Diversity I Credits: 3
- DIS 450 - Disability: Population-Environment Diversity Credits: 3
- ECO 333 - Labor Markets and Human Resource Development Credits: 3
- ECO 381 - Sustainable Development Principles and Policy Credits: 3
- ENG 235 - Literature and the Modern World Credits: 3
- ENG 236 - Intro to Canadian Literature Credits: 3
- ENG 238 - Nature and Literature Credits: 3
- ENG 243 - Topics in Multicultural Literature Credits: 3
- ENG 244 - Writers of Maine Credits: 3
- ENG 245 - American Short Fiction Credits: 3
- ENG 246 - American Women's Literature Credits: 3
- ENG 249 - American Sports Literature and Film Credits: 3
- ENG 253 - Shakespeare: Selected Plays Credits: 3
- ENG 336 - Canadian Literature Credits: 3
- ENG 440 - American Seminar Credits: 3
- ENG 459 - British Seminar Credits: 3
- ENG 460 - Major Authors Credits: 3
- FAS 270 - Immigration, Yesterday and Today Credits: 3
- FSN 436 - Food Law Credits: 3
- GEE 250 - Sustainable Solutions in the Developing World Credits: 3
- GEE 298 - Introduction to Nanoscale Science and Engineering Credits: 3
- HON 308 - Visiting Scholar in Ethics Tutorial Credits: 3
- HTY 424 - History of Russia II: The Russian Revolution, 1881-1991 Credits: 3
- HTY 460 - Modern Canada Credits: 3
- HTY 479 - U.S. Environmental History Credits: 3
- INT 302 - Foundations of Universal Design: The Ecology of Human Environments Credits: 3
- INT 400 - (University Wide) Pop!Tech: The Impact of Technology on Society Credits: 3
- INT 491 - (University Wide) A Midwife's Tale and the Social Web Credits: 3
- LDR 200 - Leadership Ethics Credits: 3
- MSL 302 - Applied Team Leadership Credits: 3

- MSL 401 - Mission Command and the Army Profession Credits: 4
- MUE 210 - Introduction to Music Education Credits: 3
- NAV 304 - Leadership and Ethics Credits: 3
- NUR 304 - Concepts in Nursing for the Practitioner Credits: 3
- NUR 455 - Senior Clinical Practicum Credits: 4
- PAX 290 - Nonviolence: Perceptions and Perspectives Credits: 3
- PAX 351 - This Sacred Earth: Ecology and Spirituality Credits: 3
- PAX 491 - Forgiveness: Creating a Culture of Peace and Reconciliation Credits: 3
- PHI 100 - Contemporary Moral Problems Credits: 3
- PHI 102 - Introduction to Philosophy Credits: 3
- PHI 104 - Existentialism and Literature Credits: 3
- PHI 210 - History of Ancient Philosophy Credits: 3
- PHI 223 - Modern Jewish Thought Credits: 3
- PHI 230 - Ethics Credits: 3
- PHI 231 - Topics in Applied Ethics Credits: 3
- PHI 232 - Environmental Ethics Credits: 3
- PHI 233 - Business Ethics Credits: 3
- PHI 235 - Biomedical Ethics Credits: 3
- PHI 236 - Feminist Ethical, Social and Political Theory Credits: 3
- PHI 240 - Social and Political Philosophy Credits: 3
- PHI 244 - Philosophy of Law Credits: 3
- PHI 286 - Religions and Philosophies of the East: Hinduism Credits: 3
- PHI 287 - Religions and Philosophies of the East: Buddhism Credits: 3
- PHI 312 - History of Modern Philosophy Credits: 3
- PHI 317 - Existentialism and Phenomenology Credits: 3
- PHI 342 - Marxist Philosophy I: The Philosophy of Karl Marx Credits: 3
- PHI 344 - Theories of Justice Credits: 3
- PHI 345 - Global Justice Credits: 3
- PHI 346 - The Philosophy of Mahatma Gandhi Credits: 3
- PHI 432 - Environmental Philosophy and Policy Credits: 3
- POS 201 - Introduction to Political Theory Credits: 3
- POS 301 - Classical Political Thought Credits: 3
- POS 303 - Early Modern Political Thought Credits: 3
- POS 305 - Late Modern Political Thought Credits: 3
- POS 307 - Democratic Theory Credits: 3
- POS 353 - The U.S. Congress Credits: 3
- POS 370 - International Terrorism: The Challenges for America Credits: 3
- POS 384 - American Civil Liberties Credits: 3
- POS 401 - Seminar in Political Theory Credits: 3
- POS 484 - The American Constitution and Criminal Due Process Credits: 3
- PSE 121 - Human Societies, Soil and Water: The Unbreakable Link Credits: 3
- PSE 430 - Environmental Horticulture Credits: 3
- SFR 446 - Forest Resources Policy Credits: 3
- SOC 208 - Problems of Violence and Terrorism Credits: 3
- SOC 337 - Sociology of Mental Illness Credits: 3
- SVT 325 - Surveying/Engineering Ethics Credits: 1
- WGS 101 - Women's, Gender and Sexuality Studies Credits: 3

- WGS 230 - Women, Health, and the Environment Credits: 3
- WGS 410 - Feminist, Gender and Queer Theory Credits: 3

## Capstone Experience

Students must complete a capstone experience. The goal is to draw together the various threads of the undergraduate program that bear directly upon the academic major in an experience that typifies the work of professionals within the discipline. Normally, the Capstone would conclude at the end of the student's senior year. Students should consult closely with their academic advisor to explore the range of options available for meeting this requirement.

# Procedures for Transfer of Academic Credit

## Transfer Students

- **Official Transcripts:** Applicants must arrange for official college transcripts to be forwarded from previously attended colleges and universities to Application Processing, University of Maine System, P.O. Box 412, Bangor, ME 04402-0412. Veterans must submit a Joint Services transcript or Form DD295.
- **Credits and Grades:** Academic work must be completed with grades of "C-" or better at regionally accredited institutions of higher education to be accepted towards meeting the requirements of a University of Maine baccalaureate degree. Some courses may not transfer because a particular course is not applicable to any UMaine program of study (with the exception of courses within the University of Maine System) or is not normally associated with a bachelor's degree. Grades and grade point averages do not transfer. Credit will not be awarded for other institutionally based exams. The Office of Student Records maintains a transfer equivalency database of courses that are offered at some institutions that are transferable to the UMaine.
- **Pass/Fail Courses:** Courses taken as a pass/fail must be proven to be equivalent to a C- or higher. Pass/fail courses can only be used as a general elective.
- **Residency Requirement:** Refer to the Degree/Graduation Requirements section of the catalog.
- **Time Limitations of Course Work:** Some subject areas have changes dramatically over time. Courses over ten years old will be subject to additional review to determine if they are in fields where there have been significant changes making the material outdated. Those courses that are determined to be missing important new material will be excluded from transfer.
- **General Education Courses:** All students are also required to pass English 101 or an approved equivalent with a grade of C or better, and to complete the University of Maine's general education requirements. Note: Students who have previously earned a bachelor's degree are exempt from the general education requirements. Transferred courses that have direct UMaine equivalents fulfill the same general education categories as their UMaine counterparts, except for "writing intensive" courses. Students who wish to may request approval of transferred courses for meeting the writing intensive requirement by contacting the English Department. Transferred courses that do not have exact UMaine equivalents, but are accepted for elective credit, may meet general education requirements. The determination will be made by the Office of Student Records. If the course title and description are insufficient to make the determination, the Office of Student Records will request further materials from the student.
- **Substitutions/Waivers:** Exceptions to equivalencies (different equivalents, waivers of curricular requirements based on transfer credit, or assessment of student learning outcomes, or limitations on transfer credit applied to degree requirements) may be allowed and recorded at the college or department level, but will not appear on the official evaluation or University of Maine transcript.
- **Credit from International Institutions:** The University of Maine accepts credit from international institutions, both for international students and for domestic students participating in study abroad programs. UMaine awards credit to students who have earned the International Baccalaureate diploma and scored 5, 6, or 7 on the higher level examinations. Official transcripts and official translations by credential evaluation services of non-English originals are required. Contact the Office of International Programs in 240 Estabrooke Hall (207) 581-2905 for information or check the website <http://umaine.edu/international/international-admissions/international-transfer-credit-evaluation/>
- **Prior Learning Credit/Internal Credit by Examination:** Matriculated students may be awarded credit for prior learning for subjects comparable or equivalent to University of Maine courses. Departments conduct reviews of prior

learning at their discretion. Students seeking a review should contact their dean's office. Prior learning is evaluated and credit is awarded through a portfolio review or an exam. The department will assess a \$50 review fee that will be charged to the student's account through the Bursar's Office. No more than fifteen (15) credit hours may be earned through portfolio review.

Select departments, including the Dept. of Modern Languages & Classics and the Dept. of English, evaluate prior learning through exams. Interested students should contact the appropriate department for information about available exams and any applicable fees.

- **External Credit by Examination:** CLEP (see College Level Examination Program Table chart) and AP exams (see Advanced Placement Credit Table chart) are accepted for credit as national examinations (for University policy regarding these exams, see the Admission section of this catalog). CLEP exams are administered through College Success Programs (East Annex Building). In addition to a fee paid directly to CLEP, College Success Programs assesses a \$30 fee that will be charged to the student's account through the Bursar's Office. No more than fifteen (15) credit hours may be earned through CLEP/DSST exams.  
For students seeking English credit: The Dept. of English assesses a \$50 review fee for its evaluation of CLEP essays.

Students who have already taken an exam must request an official score report to be sent directly from The College Board to the Office of Student Records. External credit exams may not be substituted for certain courses in the academic major. The number of credits students may earn through these exams varies.

- **Military Credit:** Credits allowed will be based on recommendations of the American Council on Education (ACE) and National College Credit Recommendation Services (National CCRS, formerly National PONSI) and will correspond to subject areas offered at the University of Maine. Only courses recommended at the upper or lower baccalaureate level will be considered for transfer credit. A maximum of 15 credits will be allowed as military transfer credit (not including prior experiential learning and credit for standardized tests) and the courses will count as elective credit only unless an exception is made. The process for an exception is as follows: the student should contact his or her college or school Associate Dean who will forward the material to the appropriate department chair, unit director, or faculty member who will make the appropriate decision.

Credit for military experience: credit for learning due to duties or a position in the military is considered prior learning and will be considered in the same way as other prior experiential learning. See subsection "Prior Learning Credit" in this section.

- **Physical Education and Emergency Medical Technician Courses and First Year Seminars:** Physical Education skills classes will be limited to a total of eight credit hours. Participation in varsity athletics will not transfer. Emergency Medical Technician courses will be limited to nine total transfer credit hours. First year seminar type courses will be limited to three credit hours. Although credit hours transfer to the university, it is up to the discretion of your Academic Unit to determine how many course hours are utilized in your degree program.
- **Evaluation:** An official evaluation of transfer credit will be completed after admission to the University and will be available in the Student Center. This evaluation will show course equivalencies, free electives and if a course meets a general education requirement. How this information fits into the student's degree program is up to the discretion of the department that houses the major. Students that do not agree with an evaluation of their courses may submit a syllabus used for the course to the Office of Student Records. The syllabus should be attached to a statement in writing defining which course or courses they feel were evaluated inaccurately. The Office of Student Records will review the appeal with a representative from the appropriate college.

## Current Students

- **Official Transcripts:** Current University of Maine students should send transcripts of courses completed elsewhere to the Office of Student Records, 5781 Wingate Hall, Orono, ME 04469.

- **Repeated Courses:** Courses taken at another institution may transfer to meet a requirement but will not replace the low grade of a course taken at the University of Maine. To replace a grade for such a course, the course must be repeated at UMaine.
  
- **Courses within the University of Maine System:**
  - Students who take courses from any other University of Maine System institution will have any credit earned with a grade of C- or better automatically applied as transfer credit to their academic record at the institution where they are matriculated. [One exception is ENG 101-College Composition which requires an equivalent with a minimum grade of C.]
  - For financial aid purposes, students who do not earn a grade of C- or better will still have their transfer credit processed and recorded in the system, but the credit will not display on the transcript of the institution where they are matriculated.
  - Students should complete a Domestic Study Away form to insure that the transfer credit will apply toward completion of their degree. Students who are applying for financial aid must complete a Domestic Study Away form available on the Office of Student Records website: <http://studentrecords.umaine.edu/forms/>
  - Courses taken at other UMS institutions will be identified 35 days after the last day of finals. It will be the responsibility of the student to notify the Office of Student Records if subsequent grade changes require the original credit to be reevaluated.
  - Students who are not receiving federal financial aid or VA benefits may opt out of this automated transfer credit processing by completing the Internal Transfer Credit Opt Out form and filing it with the Office of Student Records before the last day of classes.

## **Non-Degree Students**

- Transfer credit evaluations are not performed for non-degree students.

# Official Records

## Transcripts

The Office of Student Records maintains the official academic record of each student in perpetuity and provides official transcripts to students upon request. Official transcripts are comprised of your entire academic career.

## Student Rights

The Family Educational Rights and Privacy Act (FERPA) gives students certain rights with respect to their education records. They are:

- I. The right to inspect and review the student's education records.
- II. The right to request the amendment of the student's education records that the student believes are inaccurate, misleading or in violation of the student's rights of privacy.
- III. The right to provide written consent to disclosures of personally identifiable information contained in the student's education records, except to the extent that FERPA authorizes disclosure without consent.
- IV. The right to file a complaint with the U.S. Department of Education concerning alleged failures by The University of Maine to comply with the requirements of FERPA. The name and address of the Office that administers FERPA is:

Family Policy Compliance Office  
U.S. Department of Education  
400 Maryland Avenue, S.W.  
Washington, DC, 20202-4605

## Directory Information

The University of Maine has designated certain information contained in the education records of its students as directory information for purposes of FERPA. Such directory information may be publicly shared by the University unless the student has taken formal action to restrict its release. Directory information includes; name, address, e-mail address, phone number, major and degree, participation in officially recognized activities and sports, weight and height of student athletes, most recent previous college or university attended, dates of attendance, degrees and awards received, enrollment status (full-time or part-time), grade level and date of birth. Students can indicate that their directory information not be released at any time while they are an enrolled student at the University.

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# Named Professorships and Chairs

## Named Professorships and Chairs

**Mark and Marcia Bailey Professorship of Speech and Theatre**, Dr. Nathan E. Stormer

**Bath Iron Works Professorship in Structural Engineering**, Dr. Habib-J. Dagher

**Adelaide C. Bird and Alan L. Bird Professor in History**, Dr. Nathan Godfried, Dr. Elizabeth McKillen, and Dr. Stephen Miller

**John C. Bridge Engineering Professorship**, Dr. William G. Davids

**Henry R. and Grace V. Butler Professorship of Electrical & Computer Engineering**, Dr. Bruce E. Segee

**Louis Calder Professor of Pulp and Paper Technology**, Dr. Joseph M. Genco

**Roger C. and Virginia A. Castle Professorship in Electrical Engineering**, Dr. Mauricio Pereira da Cunha

**Correll Presidential Chair in Energy**, Dr. Krish Thiagarajan

**Agatha B. Darling Professorship of Oceanography**, Dr. Lawrence M. Mayer

**George H. Denton Professorship of Earth Sciences**, Dr. Aaron E. Putnam

**Lloyd H. Elliott Professorship in English**, visiting scholars

**Farm Credit Assistant Professorship of Production Economics and Agriculture Finance**, Dr. Xuan Chen

**Edwin L. Giddings Professor of Forest Policy**, Dr. Robert J. Lillieholm

**Edward Sturgis Grew Professorship in Petrology and Minerology**, Dr. Alicia Cruz-Uribe

**Richard C. Hill Professorship in Mechanical Engineering**, Dr. S. David Dvorak

**Curtis Hutchins Professor of Forest Ecosystem Management**, Dr. Robert S. Seymour

**Irving Chair for Forest Ecosystem Management**, Dr. Aaron Weiskittel

**Dr. Waldo "Mac" Libbey '44 Professorship in Electrical and Computer Engineering**, Dr. Yifeng Zhu

**Libra Professorship in Conservation Biology**, Dr. Malcolm L. Hunter, Jr.

**Libra Professorship of Geological Sciences**, Dr. George H. Denton

**Libra Professorship of Mechanical Engineering**, Dr. Andrew J. Goupee

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**University of Maine Libra Professorship**, Dr. Heather M. Leslie

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**Malcolm G. Long Professorship in Civil Engineering**, Dr. Robert Lopez-Anido

**Col. James C. McBride Distinguished Professorship in History**, Dr. Richard C. Judd

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**Barbara Wheatland Professorship of Geospatial Innovation**, Dr. Daniel Hayes

**Arthur O. Willey Professor of Mechanical Engineering**, Dr. Senthil S. Vel

# Award Recipients

## Alumni Association Distinguished Maine Professor Award Recipients

2015 William Davids  
2014 Mary Jane Perry  
2013 Robert Lad  
2012 Joseph M. Genco  
2011 Alfred A. Bushway  
2010 Paul A. Mayewski  
2009 James M. Acheson  
2008 Janice V. Kristo  
& John F. Vetelino  
2007 Ivan J. Fernandez  
2006 David W. Townsend  
2005 Robert A. Strong  
2004 Eric N. Landis  
2003 Kevin J. Boyle  
2002 James W. Warhola  
2001 Keith W. Hutchison  
2000 Douglas M. Allen  
1999 Brenda M. Power  
1998 Fred H. Irons  
1997 Irving L. Kornfield  
1996 Malcolm L. Hunter, Jr.  
1995 Habib J. Dagher  
1994 Dana N. Humphrey  
1993 George H. Denton  
1992 Raymie E. McKerrow  
1991 Stephen A. Norton  
1990 Alan J. Kimball

1989 Fred B. Knight  
1988 Dana W. Birnbaum  
1987 Brian Green  
1986 Anne P. Sherblom-Clark  
1985 John A. Alexander  
1984 John W. Toole  
1983 Martin R. Stokes  
1982 Eugene A. Mawhinney  
1981 Mary S. Tyler  
1980 Malda Brandt-Newman  
1979 Michael H. Lewis  
1978 Charles W. Smith  
1977 Melvin Gershman  
1976 Donald A. Grant  
1975 Erling R. Skorpen  
1974 William G. Valteau  
1973 John H. Dearborn  
1972 Constance H. Carlson  
1971 Douglas A. Gelinac  
1970 Joseph Scimecca  
1969 Robert B. Thomson  
1968 Jonathan Biscoe  
1967 David W. Trafford  
1966 Richard G. Emerick  
1965 Vincent A. Hartgen  
1964 Benjamin R. Speicher  
1963 Walter S. Schoenberger

## Presidential Outstanding Teaching Award Recipients

2015 Kirsten E. Jacobsen  
2014 J. Malcolm Shick  
2013 Richard Borgman  
2012 Mary E. Rumpho  
2011 Douglas W. Nangle  
2010 Judith R. Pearse  
2009 Leonard J. Kass  
2008 Gail B. Werrbach  
2007 Irving L. Kornfield  
2006 Mary S. Tyler  
2005 Patricia A. Burnes  
2004 Kim K. McKeage

2003 Robert D. Franzosa  
2002 Eric N. Landis  
2001 Constance M. Perry  
2000 Owen F. Smith  
1999 Keith W. Hutchison  
1998 Sandra L. Caron  
1997 Fred H. Irons  
1996 Paul B. Roscoe  
1995 Barbara J. W. Cole  
1994 William E. Glanz  
1993 Sandra L. Gardner  
1992 Christina L. Baker  
1991 Kristin M. Langellier

### **Presidential Public Service Achievement Award Recipients**

|                              |                             |
|------------------------------|-----------------------------|
| 2015 Laura A. Lindenfeld     | 1996 Alfred A. Bushway      |
| 2014 Bruce E. Segee          | 1995 James H. Breece        |
| 2013 George Markowsky        | 1994 Ray B. Owen            |
| 2012 Karen J. Horton         | 1993 Edward D. "Sandy" Ives |
| 2011 Kathleen March          | 1992 Lucille A. Zeph        |
| 2010 Thomas E. Christensen   | 1991 William H. Whitaker    |
| 2009 Kathryn J. Olmstead     | 1990 Herbert Hidu           |
| 2008 Alan B. Cobo-Lewis      | 1989 David F. Wihry         |
| 2007 Herbert L. Crosby       | 1988 Robert C. Bayer        |
| 2006 Carol B. Gilmore        | 1987 James A. Wilson        |
| 2005 David H. Lambert        | 1986 Vaughn H. Holyoke      |
| 2004 Todd M. Gabe            | 1985 Barbara A. Barton      |
| 2003 Harlan J. Onsrud        | 1984 Richard J. Campana     |
| 2002 Sandra L. Caron         | 1983 Patricia M. Pierson    |
| 2001 Ann K. Schonberger      | 1982 Richard C. Hill        |
| 2000 Walter G. McIntire      |                             |
| 1999 George L. Jacobson, Jr. |                             |
| 1998 Dana N. Humphrey        |                             |
| 1997 Sheila J. Pechinski     |                             |

### **Presidential Research and Creative Achievement Award Recipients**

|   |   |
|---|---|
| 2015 Richard W. Judd                          | 1992 J. Malcolm Shick                   |
| 2014 M. Kate Beard-Tisdale                    | 1991 Merrill F. Elias                   |
| 2013 Francis Drummond                         | 1990 Stephen A. Norton                  |
| 2012 Hemant P. Pendse                         | 1989 William J. Baker                   |
| 2011 John F. Mahon                            | 1988 Michael D. Bentley                 |
| 2010 Paul B. Roscoe                           | 1987 John H. Dearborn                   |
| 2009 Owen F. Smith                            | 1986 Colin E. Martindale                |
| 2008 Mary Ellen Camire                        | 1985 Richard D. Blake                   |
| 2007 Elizabeth DePoy                          | 1984 Harold W. Borns,<br>David C. Smith |
| 2006 Kyriacos C. Markides                     | 1983 No Award                           |
| 2005 James M. Acheson                         | 1982 Bruce L. Nicholson                 |
| 2004 Robert J. Lad                            | 1981 Carroll F. Terrell                 |
| 2003 Habib J. Dagher                          | 1980 John F. Vetelino                   |
| 2002 Max J. Egenhofer                         | 1979 James D. McCleave                  |
| 2001 Kevin Boyle                              | 1978 Peter Csavinsky                    |
| 2000 Janice V. Kristo,<br>Rosemary A. Bamford | 1977 William Pease, Jane Pease          |
| 1999 Charles T. Hess                          | 1976 Robert J. Jensen                   |
| 1998 Douglas M. Allen                         | 1975 George H. Denton                   |
| 1997 Gary M. King                             | 1974 Geddes W. Simpson                  |
| 1996 Burton N. Hatlen                         |   |
| 1995 Erdogan Kiran                            |   |
| 1994 C. Stewart Doty                          |   |
| 1993 William N. Unertl                        |   |

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# Full Time Faculty

Titles and appointments are as of August 31, 2015

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**Akono Ada, Jean Henri** (2013). Ph. D. University of Texas, 2013; M.S. Rochester Institute of Technology, 2006; M.S. North Dakota State University, 2005; B.S. University of Buea, Cameroon, 2003; Assistant Professor of Accounting

**Albertson, Constant K.** (2001). BFA Washington University, St. Louis 1983; M.Ed. McGill University, Montreal 1996; Ph.D. Concordia University, Montreal 2001; Associate Professor of Art

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**Allen, Douglas M.** (1974). BA Yale University, New Haven 1963; MA Vanderbilt University, Nashville 1967; Ph.D. Vanderbilt University, Nashville 1971; Professor of Philosophy

**Allen, John W.** (2005). BS University of Maine, Orono 1996; MS University of Maine, Orono 1999; Assistant Professor of Electrical Engineering Technology

**Alyokhin, Andrei** (2001). BSC Moscow Pedagogical University, Moscow 1994; Ph.D. University of Massachusetts, Amherst 1999; Professor of Applied Entomology; Director, School of Biology and Ecology; Graduate Coordinator in the School of Biology and Ecology

**Amar, Francois G.** (1983). BA Temple University, Philadelphia 1975; MS University of Chicago, Chicago 1977; Ph.D. University of Chicago, Chicago 1979; Dean of Honors College; Professor of Chemistry

**Ambroise, Jeffrey W.** (2012). BA State University of New York, Cortland, Cortland 1998; MA Union College, Schenectady 2002; Assistant Football Coach; Offensive Line Coach; Lecturer in Physical Education

**Amirbahman, Aria.** (1997). BS San Jose State University, San Jose 1984; MS San Jose State University, San Jose 1989; Ph.D. University of California, Irvine 1994; Professor of Environmental Engineering; Cooperating Professor in the School of Policy and International Affairs

**Anderson, Gary W.** (1982). BS Pennsylvania State University, University Park 1976; MS University of Connecticut, Storrs 1978; Ph.D. Virginia Polytechnic Institute, Blacksburg 1982; Associate Extension Professor; Cooperating Associate Professor of Animal, Veterinary and Aquatic Science; Animal and Biosciences Specialist

**Anderson, Joel** (2015). BS Bates College, Lewiston 2005; MA University of Iceland, Reykjavik 2008; Lecturer in Medieval History

**Anderson, Joel C.** (2005). AS Eastern Maine Community College, Bangor 1985; BS University of Maine, Orono 1989; Lecturer in Mechanical Engineering Technology

**Anderson, Mark W.** (1980). ABA Bowdoin College, Brunswick 1974; MS University of Maine, Orono 1980; Senior Instructor, Resource Economics and Policy; Coordinator, Ecology and Environmental Sciences Program; Graduate Student Coordinator for the NSF ESPCoR Sustainable Science Initiative; Sustainability Solutions Initiative Graduate Coordinator

**Annis, Seanna L.** (1998). BS University of Toronto, Toronto 1986; MS University of Toronto, Toronto 1990; Ph.D. University of Guelph, Guelph 1995; Associate Professor of Mycology

**Artesani, A. James** (1993). BS Barrington College, Barrington 1979; M.Ed. University of Maine, Orono 1983; Ed.D. West Virginia University, Morgantown 1992; Chair, Department of Teacher and Counselor Education; Associate Professor of Special Education

**Artesani, Laura** (1997). BM Barrington College, Barrington 1980; MM University of Maine, Orono 1984; DMA West Virginia University, Morgantown 1997; Associate Professor of Music;

**Astumian, Raymond** (2001). BS University of Texas, Arlington 1978; MS University of Texas, Arlington 1982; Ph.D. University of Texas, Arlington 1983; Professor of Physics

**Atherley, Robert S.** (1993). BS University of Maine, Orono 1988; MS University of Maine, Orono 1991; Head Coach of Women's Soccer; Lecturer in Physical Education

**Atkins, Lynn A.** (2000). BS Gettysburg College, Gettysburg 1995; MS University of Maine, Orono 2000; Instructor in Biological Sciences; Undergraduate Advisor for Undecided Students

**Atzema, Eisso J.** (1997). MA Nijmegen Catholic University, Netherlands 1988; Ph.D. Utrecht University, Netherlands 1993; CERT Utrecht University, Netherlands 1996; Lecturer in Mathematics

**Babineau, Josette M.** (2007). BS University of New Brunswick, 1993; Head Field Hockey Coach; Lecturer in Physical Education

**Baker, Barbara A.** (2006). BS Kent State University, Kent 1976; M.Ed. Youngstown State University, Youngstown 1989; Extension Educator in 4-H Youth Development; Associate Extension Professor

**Barkan, Steven E.** (1979). BA Trinity College, Hartford 1973; MA State University of New York, Stony Brook 1976; Ph.D. State University of New York, Stony Brook 1980; Professor of Sociology

**Barrett, Dan M.** (2015). BM Brigham Young University, Provo 2004; MM Brigham Young University, Provo 2006; Ph.D. Arizona State University, Tempe 2009; Lecturer in Music

**Barrett, David J.** (2004). BA College of the Holy Cross, Worcester 1995; MA Kelley School of Business, Indiana University, Bloomington 2001; Ph.D. Kelley School of Business, Indiana University, Bloomington 2004; Lecturer in Accounting

**Barron, Richard H.** (2011). BA Kenyon College, Gambier 1991; Head Women's Basketball Coach/Lecturer in Physical Education

**Bartosenski Bowden, Mary** (2012). BA University of Maine, Orono 1986; MA University of Maine, Orono 1988; Lecturer III in English

**Bassano, Louis V.** (1980). BS Delaware State College, Dover 1971; BS University of Delaware, Newark 1974; MS University of Tennessee, Knoxville 1975; Ph.D. University of Maryland, College Park 1987; Extension Educator, Washington County; Extension Professor; Cooperating Professor of Education

**Batuski, David J.** (1988). BS United States Air Force Academy, Colorado Springs 1970; MS Purdue University, Lafayette 1971; Ph.D. University of New Mexico, Albuquerque 1986; Professor of Physics

**Bayer, Robert C.** (1972). BS University of Vermont, Burlington 1966; MS University of Vermont, Burlington 1968; Ph.D. Michigan State University, East Lansing 1972; Professor of Animal and Veterinary Sciences; Cooperating Professor of Food Science and Human Nutrition; Director of Lobster Institute

**Beard-Tisdale, Mary Kate** (1987). BS Iowa State University, Ames 1976; MS University of Wisconsin, Madison 1984; Ph.D. University of Wisconsin, Madison 1988; Director of National Center for Geographic Information and Analysis; Professor of Spatial Information Science and Engineering; Cooperating Professor in the Graduate School of Biomedical Sciences

**Beitl, Christine M.** (2013). Ph.D. University of Georgia, 2012; MA Florida International University, 2005; BA Ohio University, 1997; Assistant Professor of Anthropology

**Belknap, Daniel F.** (1982). BA Bowdoin College, Brunswick 1973; MS University of Delaware, Newark 1975; Ph.D. University of Delaware, Newark 1979; Professor of Earth Sciences; Cooperating Professor of the Climate Change Institute and the School of Marine Sciences; Cooperating Curator, Hudson Museum

**Bell, Kathleen P.** (2001). BA Bowdoin College, Brunswick 1990; MA University of Maryland, College Park 1994; Ph.D. University of Maryland, College Park 1997; Associate Professor of Resource Economics and Policy; Sustainability Solutions Initiative Stewardship Council member

**Bellsky, Thomas J.** (2014). Ph.D. Michigan State University; BA Michigan State University; Assistant Professor of Mathematics

**Benjamin, Jeffrey G.** (2005). BS University of New Brunswick, Fredericton; Ph.D. University of New Brunswick, Fredericton 2006; Associate Professor of Forest Operations; Coordinator of Forest Operations for CFRU; Program Leader-Forestry

**Bennett-Armistead, Victoria S.** (2006). Ph.D. Michigan State University, East Lansing 2006; Associate Professor of Literacy; Cornell Professor in Early Literacy; Program Coordinator of Literacy

**Berardelli, Catherine M.** (2000). BSN Oregon Health Sciences University, Portland 1972; MSN University of Southern Maine, Portland 1985; Ph.D. Adelphi University, Garden City 1994; Assistant Director of Nursing; Lecturer of Nursing; RN-BSN Coordinator; RN Studies Coordinator

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**Berube, Keith A.** (2000). Ph.D. University of Maine; MS University of Maine; BAS University of Maine; Assistant Professor of Mechanical Engineering Technology

**Bicknell, Elizabeth H.** (1983). BS University of Maine, Orono 1972; MS Boston University, Boston 1982; Associate Professor of Nursing

**Biddle, Catharine C.** (2015). BA Brown University, Providence 2006; M.Ed. Lesley University, Cambridge 2008; Ph.D. Pennsylvania State University, University Park 2015; Assistant Professor of Educational Leadership

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**Blackmer, Travis L.** (2015). BA University of Maine, Orono 2012; MA University of Maine, Orono 2014; Lecturer of Economics

**Blackstone, Amy M.** (2003). BA Luther College, Decorah 1994; Ph.D. University of Minnesota, Minneapolis 2003; Director of Advance Rising Tide; Associate Professor and Chair, Sociology Department

**Blais, Joline J.** (2002). AB Harvard University, Cambridge 1982; Ph.D. University of Pennsylvania, Philadelphia 1991; Associate Professor of New Media Program

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**Blomberg, Erik** (2013). BS University of Wisconsin, Stevens Point 2005; MS University of Rhode Island, Kingston 2007; Ph.D. University of Nevada, Reno 2012; Assistant Professor of Wildlife Population Ecology

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**Borgman, Richard H.** (1995). BA Virginia Polytechnic Institute and State University, Blacksburg 1975; MA Virginia Polytechnic Institute and State University, Blacksburg 1979; MBA Virginia Polytechnic Institute and State University, Blacksburg 1988; Ph.D. University of Florida, Gainesville 1994; Professor of Finance; Interim Graduate Director

**Boss, Emmanuel** (2002). BSC Hebrew University, Jerusalem 1990; MSC Hebrew University, Jerusalem 1991; Ph.D. University of Washington, Seattle 1996; Professor of Oceanography; Cooperating Professor- School of Policy and International Affairs

**Bourgoin, Kevin M.** (2005). BS University of Massachusetts, Amherst 1996; Associate Head Football Coach/Lecturer in Physical Education

**Bousfield, Douglas W.** (1986). BS Montana State University, Bozeman 1981; MS Oregon State University, Corvallis 1983; Ph.D. University of California, Berkeley 1986; Professor of Chemical Engineering; Professor of Pulp and Paper Foundation

**Bowden, Timothy** (2011). BS University of Lancaster, Lancaster 1988; Ph.D. University of Aberdeen, Aberdeen 1998; MP Napier University, Edinburgh 1993; MS Robert Gordon University, Aberdeen 2006; Assistant Professor of Aquaculture

**Boyle, Michael T.** (1984). BS University of Connecticut, Storrs 1976; MS University of Connecticut, Storrs 1981; Ph.D. University of Connecticut, Storrs 1984; Associate Professor of Mechanical Engineering

**Bradley, David M.** (1998). BM University of Waterloo, Waterloo 1990; Ph.D. University of Illinois, Urbana-Champaign 1995; Associate Professor of Mathematics and Graduate Coordinator

**Brady, Damian C.** (2010) BS Roger Williams University, Bristol 2000; Ph.D. University of Delaware, Lewes 2008; Research Assistant Professor; Assistant Director for Research

**Brakey, Mary R.** (1984). RN Saint Francis School of Nursing, Jersey City 1974; BS Pace University, Pleasantville 1978; MSN Seton Hall University, South Orange 1984; DNS, Widener University, Chester 1999; Associate Professor of Nursing

**Brawley, Susan H.** (1991). BA Wellesley College, Wellesley 1973; Ph.D. University of California, Berkeley 1978; Professor of Plant Biology; Cooperating Professor of Biological Sciences; Coordinator of the Marine Biology Program

**Breece, James H.** (1983). Ph.D. Boston College, 1982; BA University of Vermont, 1977; Associate Professor of Economics

**Bregman, Jay A.** (1975). AB Hunter College, New York 1968; M.Ph. Yale University, New Haven 1972; Ph.D. Yale University, New Haven 1974; Professor of History

**Brewer, Mark D.** (2003). BA Syracuse University, Syracuse 1993; MA Syracuse University, Syracuse 1997; Ph.D. Syracuse University 2001; Interim Chair and Professor of Political Science

**Brichacek, Matthew P.** (2014). BS University of Minnesota, Duluth 2005; Ph.D. Cornell University, Ithaca 2010; Assistant Professor of Chemistry

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**Broderick, Martha** (2004). BA University of Maine, Orono 1980; JD Western New England School of Law, Springfield 1983; Lecturer in Business Law

**Brookes, Sarah** (2013). Ph.D. Ohio State University, 2013; MA Ohio State University, 2010; BA Mount Union College, 2007; Assistant Professor of Communication and Journalism

**Brown, Carlton A.** (2005). BS Carnegie Mellon University, Pittsburgh 1972; MS Salem State College. Salem 1999; Associate Professor of Surveying Engineering Technology

**Bruce, Alice E.** (1987). BS Antioch College, Yellow Springs 1978; MA Columbia University, New York 1981; Ph.D. Columbia University, New York 1985; Associate Professor of Chemistry

**Bruce, Mitchell R. M.** (1987). BS Antioch College, Yellow Springs 1979; MA Columbia University, New York 1981; Ph.D. Columbia University, New York 1985; Associate Professor of Chemistry

**Brucher, Richard T.** (1974). BA State University of New York, New Paltz 1969; MA Rutgers University, New Brunswick 1973; Ph.D. Rutgers University, New Brunswick 1978; Chair and Associate Professor of English

**Brzozowski, Richard J.** (1987). BS University of Missouri, Columbia 1980; MS University of Missouri, Columbia 1981; Ph.D. University of Missouri, Columbia 1988; University of Maine Cooperative Extension Small Ruminant and Poultry Specialist

**Burgess, Susan D.** (2001). MA University of Maine, Orono 1998; Lecturer III B; Staff Speech-Language Pathologist

**Burnes, Patricia A.** (1972). BA Webster College, Saint Louis 1964; Ph.D. Saint Louis University, Saint Louis 1977; Associate Professor of English; Coordinator of First Year Writing Program and Coordinator of College Composition

**Burnett, Stephanie Elaine.** (2006). BS Auburn University, Auburn 1997; MS Auburn University, Auburn 2000; Ph.D. University of Georgia, Athens 2004; Associate Professor of Horticulture

**Burt, Jack W.** (2004). BM Baldwin-Wallace College Conservatory of Music, Berea 1980; MM University of South Carolina, Chapel Hill 1983; DM University of Texas at Austin, Austin 1995; Associate Professor of Music

**Bushway, Rodney J.** (1978). BS University of Maine, Orono 1971; MS Texas A&M University, College Station 1973; Ph.D. Texas A&M University, College Station 1977; Director of the Sawyer Environmental Chemistry Research Laboratory; Professor of Food Science and Human Nutrition; Cooperating Professor of Entomology and in the Lobster Institute

**Butler, Sandra S.** (1991). BA Carleton College, Northfield 1979; MSW Washington University, Saint Louis 1985; Ph.D. University of Washington, Seattle 1991; Professor of Social Work; MSW Coordinator

**Butterfield, Stephen** (1984). BS Springfield College, Springfield 1971; M.Ed. Keene State College, Keene 1980; Ph.D. Ohio State University, Columbus 1984; Chair, Department of Exercise, Sports Science and STEM Education; Professor of Education and Special Education

**Caccese, Vincent** (1986). BS Drexel University, Philadelphia 1979; MS Drexel University, Philadelphia 1982; Ph.D. Drexel University, Philadelphia 1985; Professor of Mechanical Engineering

**Calder, Beth Louise** (2004). AS University of Maine Farmington, Farmington 1990; BS University of Maine, Orono 1997; Ph.D. University of Maine, Orono 2003; Extension Food Science Specialist; Associate Extension Professor and Associate Professor of Food Science

**Calhoun, Aram J. K.** (1997). AB Brown University, Providence 1981; MA Rhode Island College, Providence 1985; MS University of Rhode Island, Kingston 1989; Ph.D. University of Maine, Orono 1996; Director of Ecology and Environmental Sciences; Professor of Wetland Ecology; Cooperating Professor of Plant, Soil and Environmental Sciences

**Callaway, Murray T.** (1982). AA North Florida Junior College, Madison 1973; BA University of Florida, Gainesville 1975; MA University of Maine, Orono 1982; Lecturer in English

**Camire, Mary E.** (1989). BA Harvard College, Cambridge 1979; MS University of Massachusetts, Amherst 1982; Ph.D. Texas Women's University, Denton 1989; Professor of Food Science and Human Nutrition; Cooperating Research Professor in the Lobster Institute

**Campbell, Christopher** (1983). BA Harvard University, Cambridge 1968; MS University of Maine, Orono 1975; Ph.D. Harvard University, Cambridge 1980; Arboretum Director; Professor of Plant Systematics; Cooperating Professor of Forest Resources

**Capps, Daniel K.** (2011) BS Hope College, Holland 1998; MS Indiana University, Bloomington 2002; Ph.D. Cornell University, Ithaca 2011; Assistant Professor of Science Education with the College of Education and the Maine RISE Center

**Capps, Krista A.** (2011). BS Hope College, Holland 1998; MS Indiana University, Bloomington 2002; Ph.D. Cornell University, Ithaca 2011; Research Assistant Professor of Wildlife, Fisheries, and Conservation

**Caron, Sandra L.** (1988). BS University of Maine, Orono 1979; MS University of Maine, Orono 1982; Ph.D. Syracuse University, Syracuse 1986; Professor of Family Relations; Program Coordinator of Human Development

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**Causey, Robert C.** (1998). BS University of Minnesota 1985; DVM University of Minnesota 1989; Ph.D. Louisiana State University 1995; Associate Professor of Animal and Veterinary Sciences; Cooperating Associate Professor of Resource Economics and Policy

**Chai, Fei** (1996). BS Shandong College 1984; MS Shandong College 1987; MA Princeton University, Princeton 1991; Ph.D. Duke University, Durham 1995; Director, School of Marine Sciences; Professor of Oceanography; Cooperating Professor of the Climate Change Institute

**Chawathe, Sudarshan S.** (2006). BS Indian Institute of Technology, Kanpur; MS Stanford University, Stanford 1994; Ph.D. Stanford University, Stanford 1999; Associate Professor of Computer Science, Cooperating Associate Professor of the Climate Change Institute

**Chen, Xuan** (2013). Ph.D. North Carolina State University at Raleigh, 2013; MA North Carolina State University, 2009; BS Peking University, 2005; BA Peking University, 2005; Assistant Professor of Production Economics/Agricultural Finance

**Chen, Yong** (2000). BA Ocean University of Qingdao, Qingdao 1983; MSC University of Toronto, Toronto 1991; Ph.D. University of Toronto, Toronto 1995; Professor for Fisheries Population Dynamics; Cooperating Research Professor in the Lobster Institute; Program Coordinator for Marine Policy

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**Cobo-Lewis, Alan B.** (1998). BA University of Miami, Coral Gables, 1988; MS University of Wisconsin, Madison 1990; Ph.D. University of Wisconsin, Madison 1992; Associate Professor of Psychology; Cooperating Associate Professor of Graduate School of Biomedical Sciences; Cooperating Associate Professor of Education

**Cody, Howard H.** (1987). BA University of Maine, Orono 1967; MA University of Iowa, Iowa City 1969; Ph.D. McMaster University, Hamilton 1977; Professor of Political Science and Canadian Studies; Director of International Affairs; Editor of Canadian-American Public Policy

**Coffin, Donna Rae** (1980). BS University of Maine, Orono 1974; MS University of Maine, Orono 1976; Extension Educator and Extension Professor; Cooperating Professor in Animal and Veterinary Sciences

**Coghlan, Stephen** (2006). AS Cayuga Community College, Auburn 1996; BS SUNY College, Albany 1998; Ph.D. SUNY College, Albany 2004; Associate Professor of Freshwater Fisheries

**Coladarci, Theodore T.** (1983). BA California State University, Chico 1975; MA Stanford University, Stanford 1978; Ph.D. Stanford University, Stanford 1980; Director of Institutional Research; Professor of Educational Psychology

**Colburn, Steven C.** (1992). BS University of Maine, Orono 1975; MBA University of Maine, Orono 1979; Ph.D. University of Georgia, Athens 1989; Associate Professor of Accounting

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**Cole, Timothy M.** (1989). BA Colorado State University, Fort Collins 1981; MA University of Washington, Seattle 1983; Ph.D. University of Washington, Seattle 1987; Associate Dean for Academic and Student Services; Associate Professor of Political Science; Coordinator of Judaic Studies

**Collins, Scott.** (2002). Ph.D. Brigham Young University, Provo 1980; Co-Director in the Institute for Molecular Biophysics; Professor of Chemistry and the Graduate School for Biological Science;; Cooperating Professor of the Graduate School of Biomedical Sciences and Engineering

**Comins, Neil F.** (1978). BS Cornell University, Ithaca 1972; MS University of Maryland, College Park 1974; Ph.D. University College, Cardiff 1978; Professor of Physics

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**Coutts, Lynn A.** (2011). BS University of Maine, Orono 1987; Head Softball Coach; Lecturer in Physical Education

**Coutts, Michael M.** (2012). MA University of Maine, 1990; BS University of Maine, 1982; Associate Head Softball Coach/Lecturer in Physical Education

**Cowan May, Laura** (1987). AB Smith College, North Hampton 1975; Ph.D. Princeton University, Princeton 1988; Chair and Associate Professor of English; Graduate Coordinator

**Coxson, Brian T.** (2014). BS MMA Castine; Masters United Naval War College, Newport; Assistant Professor of Naval Science

**Crandall, Mindy S.** (2014). Ph.D. Oregon State University, Corvallis; MS Oregon State University; BS Oregon State University; Assistant Professor of Forest Landscape Management

**Cravens, Nilda T.** (2003). BS SUNY, Cortland 1979; MS Pace University, New York 1984; Lecturer in Nursing

**Criner, George K.** (1983). BA University of Tennessee, Knoxville 1977; MS University of Tennessee, Knoxville 1979; Ph.D. Washington State University, Pullman 1983; Professor of the School of Economics; Cooperating Professor in the School of Policy and International Affairs

**Croall, Dorothy E.** (1990). AB Gettysburg College, Gettysburg 1973; Ph.D. University of Rochester, Rochester 1979; Professor of Biochemistry; Cooperating Professor in the Graduate School of Biomedical Sciences

**Cronan, Christopher S.** (1980). BA University of Pennsylvania, Philadelphia 1973; Ph.D. Dartmouth College, Hanover 1978; Professor, Botany and Ecology; Cooperating Professor of Forest Resources

**Crouse, Joanna B.** (2015). BA Brown University, Providence; MA University of Maine, Orono 2001; MA University of Maine, Orono 2008; Lecturer in Composition

**Cruz-Uribe, Alicia M.** (2015). BA Dartmouth College, Hanover 2006; MS Northern Arizona University, Flagstaff 2008; Ph.D. Pennsylvania State University, University Park 2014; Assistant Professor of Petrology and Mineralogy

**Curry, Edniesha N.** (2015). BS University of Oregon, Eugene 2002; MBA American InterContinental University, Buckhead 2005; Lecturer

**Dagher, Habib J.** (1986). BS University of Ohio, Dayton 1980; MS University of Wisconsin, Madison 1982; MS University of Wisconsin, Madison 1984; Ph.D. University of Wisconsin, Madison 1985; Director of the Advanced Structures and Composites Center; Professor of Civil Engineering; Bath Iron Works Professor in Structural Engineering; Cooperating Research Professor in the Lobster Institute and in the School of Policy and International Affairs

**Daigle, John Joseph** (1998). BS University of Maine, Orono 1986; MS Colorado State University, Fort Collins 1990; Ph.D. University of Massachusetts, Amherst 1997; Associate Professor of Forest Recreation Management; Program Leader, Parks, Recreation and Tourism

**Daniel Jr., Harold Z.** (1997). BS Appalachian State University, Boone 1976; MS Appalachian State University, Boone 1978; Ph.D. University of Connecticut, Storrs, 1997; Associate Professor of Marketing

**Dastoor, Farahad** (1999). BS McGill University, Montreal 1988; MS University of British Columbia, Vancouver 1991; Ph.D. University of British Columbia, Vancouver 1999; Lecturer in Biological Sciences

**Dauids, William G.** (1998). BS University of Maine, Orono 1989; MS University of Maine, Orono 1991; Ph.D. University of Washington, Seattle 1998; Chair of Civil and Environmental Engineering; Professor of Civil and Environmental Engineering; John C. Bridge Engineering Professor; Member of Advanced Structures and Composites Center Management Team

**Davis, Michael P.** (2012) Ph.D. University of Notre Dame, 2008; BS University of Notre Dame, 1998; MS Worcester Polytech Institute, 2001; Lecturer of General Engineering (Brunswick Engineering Program)

**Day, Michael E.** (2009). BS University of Maine, Orono 1994; Ph.D. University of Maine, Orono, 2000; Associate Research Professor of Forest Resources; Graduate Program Coordinator

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**Denton, George H.** (1969). BS Tufts University, Medford 1961; MS Yale University, New Haven 1964; Ph.D. Yale University, New Haven 1965; Ph.D. Stockholm University, Stockholm 1995; Libra Professor of Earth Sciences and the Climate Change Institute

**Depoy, Elizabeth** (1989). BS State University of New York, Buffalo 1972; MSW University of Pennsylvania, Philadelphia 1977; Ph.D. University of Pennsylvania, Philadelphia 1988; Professor of Social Work; Coordinator of Interdisciplinary Education, Center For Community Inclusion; Cooperating Professor of the School of Policy and International Affairs; Cooperating Professor of Mechanical Engineering

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**Dieffenbacher-Krall, Ann** (2000). ABA Colgate University, Hamilton 1985; AAS Southern Maine Technical College, South Portland 1991; BS University of Maine, Orono 1992; MS University of Maine, Orono 1994; Ph.D. University of Maine, Orono 1998; Assistant Director in the School of Biology and Ecology; Assistant Research Professor in Climate Change Institute; Cooperating Assistant Research Professor of Biology

**Dill, James F.** (1981). BS University of Maine, Orono 1972; MS University of Maine, Orono 1974; Ph.D. Purdue University, West Lafayette 1979; Pest Management Specialist; Cooperating Professor of Biological Sciences

**Dimmel, Justin K.** (2015). BA Hartwick College, Oneonta 2002; MS University of Michigan, Ann Arbor 2013; Assistant Professor of Mathematics Education and Instructional Technology

**Dippre, Ryan J.** (2015). BA Wilkes University, Wilkes-Barre 2006; MS Wilkes University, Wilkes-Barre 2010; MA University of California, Santa Barbara 2013; Assistant Professor of English

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