



Undergraduate

**Catalog
2023-2024**



catalog.umaine.edu

Office of Student Records
umrecord@maine.edu

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Disclaimers

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 is an EEO/AA institution, and does not discriminate on the grounds of race, color, religion, sex, sexual orientation, transgender status, 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 of Equal Opportunity, 101 Boudreau Hall, University of Maine, Orono, ME 04469-5754, 207.581.1226, TTY 711 (Maine Relay System).

The University of Maine's non-discrimination notice can be found at <https://www.maine.edu/human-resources/university-equal-opportunity-officers/nondiscrimination-accommodation-request-notice/>

Sexual Harassment Policy

The University of Maine's sexual harassment policy can be found at <http://www.maine.edu/about-the-system/board-of-trustees/policy-manual/section402/>.

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 Boudreau Hall, Orono, ME 04469-5754; (207) 581-1226 (voice and TDD).

President's Message

A "Hearty Maine Hello" from the University of Maine, located on Marsh Island in the homeland of Penobscot Nation, and the University of Maine at Machias, our regional campus located in the territory of the Passamaquoddy.

Countless exciting and fulfilling learning experiences await you here. We offer more than 90 majors and upwards of 100 programs, and world-class faculty dedicated to empowering you and helping you succeed. We are student-centered and community-engaged, and have a foundational commitment to diversity, equity and inclusive excellence.

Hands-on instruction is key to who we are, whether it happens in the labs, in the forests, on the coast, at the office or anywhere in the world. For many of you, that begins in the first year with our Research Learning Experiences. RLEs focus on education through creation, with students engaged in research, artistic exploration, problem-solving and community. No matter what year of study you're about to begin, I hope that you take full advantage of the breadth and depth of learning opportunities offered by the state's only R1 top-tier research university.

Please also take time to explore the many clubs, activities and beautiful natural landscapes offered at our university and throughout the state of Maine. Scuba dive in the Gulf of Maine and paddle the Penobscot River. Rescue stranded seals and reconstruct the skeletons of large marine animals. Write a play and see it performed on stage. Tour with the University Singers. Hike Mount Katahdin, explore the Cutler Coast, or join the eSports club. Visit the Multicultural Center. Hone your reporting skills at Maine Campus Media. Get involved in our local community. Serve in Student Government. Intern in Augusta and Washington, D.C.

UMaine and UMaine Machias are part of the University of Maine System, the only statewide public higher education institution nationwide with unified accreditation, fostering academic program collaboration among the seven UMS universities and the Law school and additional learning opportunities for students.

For almost 160 years, UMaine has welcomed and championed trailblazers. We're dedicated to advancing the state and the planet with inspired teaching, meaningful research, technological innovation and public service. We want to equip you with the knowledge and tools necessary to succeed in your education, your career goals and throughout your life.

We are thrilled to have you here and eager to witness all you'll do as a Black Bear. Define your tomorrow at UMaine!

Sincerely,

Joan Ferrini-Mundy
President

2023-2024 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 Semester 2023	
Classes begin	Monday, August 28
Last day to add courses**	Wednesday, September 6
No Classes Labor Day	Monday, September 4
Last day to drop classes for refund*	Monday, September 11
Classes dropped on or before this date will not appear on transcript	Friday, September 29
Application for Graduation filing deadline (Dec.)	Saturday, October 1
Fall break begins	Monday, October 9
Classes resume	Wednesday, October 11
Enrollment for Spring 2024 begins	Monday, October 23
No classes Veterans Day Observed	Friday, November 10
Last day to withdraw from a class and receive 'W' grade (Withdrawn classes after this date will receive failing grade.)	Monday, November 13, 4:30 p.m.
Thanksgiving break begins	Wednesday, November 22
Classes resume	Monday, November 27
Classes end	Friday, December 8
Final exams begin	Monday, December 11
Final exams end	Friday, December 15
Final grades due	Friday, December 22

Winter Session: Tuesday, December 26, 2023 - Friday, January 12, 2024

Spring Semester 2024	
Classes begin	Tuesday, January 16
Last day to add courses**	Monday, January 22
Last day to drop courses for refund*	Monday, January 29
Application for graduation filing deadline (May)	Thursday, February 1
Classes dropped on or before this date will not appear on transcript	Friday, February 16
No classes Presidents' Day	Monday, February 19
Spring break begins	Monday, March 11
Classes resume	Monday, March 18
Enrollment for Fall 2024 begins	Monday, March 25
Last day to withdraw from a class and receive 'W' grade (Withdrawn classes after this date will receive failing grade.)	Monday, April 8, 4:30 p.m.
UMaine Student Symposium	Friday, April 12
Maine Day Week	Monday - Friday, April 22-26
Classes end	Friday, April 26
Final exams begin	Monday, April 29
Final exams end	Friday, May 3
Commencement - Graduate	Friday, May 3
Commencement - Undergraduate	Saturday, May 4
Final grades due	Friday, May 10

Summer University: Monday, May 6 -- Friday, August 16, 2024

*Class information is based on full semester classes. **Last day to change to Pass/Fail or Audit grading option.

Summer University classes have variable start and end dates; Holidays: Memorial Day, Juneteenth and Independence Day.

MaineStreet provides information on non-standard dated classes. Grading options (audit, graded or pass/fail) on classes may be changed through the add period of the class section.

updated: 06/13/23

University Overview

The University of Maine, established in Orono in 1865 under the provisions of the Morrill Act, is located on Marsh Island in the homeland of the Penobscot Nation. UMaine's regional coastal campus, the University of Maine at Machias, is located in the Passamaquoddy homeland. The universities are student-centered and community-engaged, with a foundational commitment to diversity, equity and inclusive excellence.

UMaine is the state's land grant, sea grant and space grant institution. As Maine's only top-tier R1 research university, UMaine has a statewide mission of teaching, research and community engagement, with agricultural field stations - Aroostook, Highmoor and Blueberry Hill farms, and J.F. Witter Teaching and Research Center - and one marine sciences research facility at Darling Marine Center; 17 interdisciplinary research centers and institutes; and University of Maine Cooperative Extension offices, camps and learning centers serving the 16 counties. UMaine Machias has an integral regional focus in Down East Maine, including a marine sciences field station at Downeast Institute. Both universities extend the resources of the learning communities to address educational, economic, cultural and social needs of Maine, the nation and the world.

UMaine is the flagship institution of the University of Maine System, broadening opportunities for students, faculty and staff statewide. In 2020, the University of Maine System received a \$240 million investment from the Harold Alfond Foundation - the largest gift ever given to a public institution of higher education in New England. The grant - \$90 million for Black Bear athletics, \$75 million for Maine College of Engineering and Computing, \$55 million for the Maine Graduate and Professional Center, and \$20 million for student success and retention - will propel UMaine to new heights as the state's largest educational, research, innovation and talent development asset. It aligns with UMS unified accreditation goals and UMaine Strategic Vision and Values, which focus on fostering student success, discovering and innovating, and growing and advancing partnerships.

UMaine is a vibrant community of more than 11,900 students from Maine, the United States and the world, offering more than 90 undergraduate and 100 graduate programs taught by world-class faculty and grounded in research about how people best learn. It is featured in multiple national guides of best colleges and is one of the Princeton Review's green colleges. UMaine Machias offers its more than 700 students baccalaureate degrees within an active and diverse community of learners who share a commitment to exploration, leadership, collaboration, interdisciplinary problem solving and the Washington County region.

UMaine has the Maine Business School and five colleges - Maine College of Engineering and Computing; College of Earth, Life and Health Sciences; College of Education and Human Development; College of Liberal Arts and Sciences; and Honors College. The Honors College offers one of the longest established programs in the country. UMaine Machias offers two-year and four-year programs through its divisions of Environmental and Biological Sciences; Professional Studies; and Arts and Letters.

Among the state's public universities, UMaine awards 42% of all four-year degrees, 45% of all master's degrees, and 89% of the state's Ph.D.s and Ed.D.s. The newest graduates join more than 110,000 alumni worldwide.

UMaine is home to Maine's only Division I athletics program with 17 sports programs. The Black Bears boast numerous team and individual conference championships, many trips to the NCAA Tournament, academic champions, and two National Championships in Men's Ice Hockey. Maine Athletics has developed student-athletes who have gone on to achieve much success, both in sports and in their chosen professions, including several professional athletes, Super Bowl Champions, Stanley Cup Champions and Olympians.

Fogler Library, the state's largest library, is a regional depository for federal government publications, and official depository for Canadian federal and Maine state government publications. It also is the state-designated Maine Business, Science, and Technology Library, and is the only Patent and Trademark Resource Center in Maine.

UMaine is a cultural hub for the state - with the Zillman Art Museum, Hudson Museum and Page Farm and Home Museum; visual and performing arts events at the Lord Hall Gallery, Collins Center for the Arts and School of Performing Arts; Versant Power Astronomy Center and more - that enhances and advances community engagement, learning for all ages, diversity and inclusion.

For more than a century, UMaine has conducted research of global and local relevance, contributing to the greater good in Maine and beyond. Faculty, staff and students have conducted nationally and internationally recognized research and scholarship in every county in Maine, on all continents and in all the oceans of the world. UMaine's impact comes through research and innovation in climate change, engineering, advanced structures and composites, advanced manufacturing, forestry, marine sciences, agriculture, and the arts and humanities.

UMaine and UMaine Machias partner with the private and public sectors to stimulate and support the state's economic growth and development. The university has a sustained focus on research, innovation and entrepreneurship, and 2021 research and development expenditures exceeding \$179 million. In 2022, UMaine achieved the highest Carnegie Classification as a doctoral university with very high research activity (R1) through the outstanding work of faculty and students.

The UMaine student experience in and out of the classroom reflects the breadth and depth of a research university, with interdisciplinary, immersive learning opportunities and mentoring by faculty and graduate students who are leaders in their fields. Those opportunities begin in the first year with new Research Learning Experience at UMaine and UMaine Machias focused on education through knowledge creation, with students engaged in research, creativity and community - building a mindset that will help undergraduates solve problems for life. Immersive learning and community engagement - from volunteerism and capstone projects to internships - ignite passion in students, and help address issues globally and locally.

UMaine and UMaine Machias are committed to accessible lifelong learning for learners of all ages, the creation of new knowledge and research-based problem solving to address needs and inform the future, and comprehensive outreach to improve lives and communities. Providing opportunities in an atmosphere that honors heritage and diversity are cornerstones of our mission. Through integrated teaching, research and outreach, UMaine and its regional campus improve the quality of life for people in Maine and around the world, and promote responsible stewardship of human, natural and financial resources.

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 for a Campus Tour and Admissions Welcome. Campus Tours and Admissions Welcome are typically offered weekly Monday- Saturday. In addition to daily tours, numerous open houses and other programs are also offered. To learn more or to schedule a visit, please visit our web page at <https://go.umaine.edu/visit/> or contact the Office of Admission toll-free at (207) 581-1561.

Academic Entrance Requirements

Academic course requirements for admission to the University of Maine are established by each of the five undergraduate colleges. 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. Applicants are reviewed for entrance into the first choice major selected on the application, or second choice major if the student is not eligible for admission to her/his first choice. Please visit Academic Requirements for Admission for specific course requirement information.

Candidates no longer in high school who have not completed requirements to earn a 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 visiting our undergraduate admission website at www.go.umaine.edu. Application forms are also available to download from the website and may be available in many high school guidance offices, or by contacting the Office of Undergraduate Admission by calling toll-free at 207-581-1561, or by e-mail at umaineadmissions@maine.edu. The University of Maine accepts the following forms of application: Common Application, ApplyMaine Application and Mobile Friendly App.

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 a similar test. 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 1st . Decisions will be made by the end of January. Early Action candidates will be given preference for highly selective majors, 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 1st, 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 March 1st to receive full consideration for financial aid and campus housing. Transfer applications for the fall semester are encouraged to apply by February 1st to facilitate early course registration and by June 1st for full consideration for financial aid and housing. Spring semester applicants should apply by January 1st. 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.

Admission Categories

First-year Students

A graduating high school student (regardless of number of college credits taken while in high school) or a high school graduate or GED recipient who has attempted fewer than 12 college credits after graduation and is applying to a four year bachelors degree program.

In addition to the admission application, students must submit official high school transcripts complete through the most recent set of grades available at the time the application is submitted 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 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).

Standardized Test Policy

First year candidates have the option of submitting 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 Evidence-Based Reading; Writing and Mathematics tests or the ACT composite score. The highest individual test results for the SAT Evidence-Based Reading & Writing test and the SAT Mathematics test will be used from the same or multiple test administrations to create the highest composite SAT score. 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 January 1st for spring admission and February 1st for fall admission to allow for ample processing time. Spring applications received after January 1st and fall applications received after June 1st will be reviewed on a space available basis. 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.

Along with the application, transfer students must submit an official final high school transcript showing date of graduation and official transcripts of all attempted college-level coursework. 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 Core, based on the State of Maine requirements, after 1 semester of attendance at UMaine. Transfer students with 45+ credits not passing PRAXIS Core 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 their undergraduate work must first apply for readmission. Since the application process may vary depending on a student's academic history and intended major, it is advisable to seek instructions from the academic dean of the undergraduate college or the director of the program in which enrollment is sought. Students who have a 2.0 or better cumulative UMaine GPA are normally readmitted to the program they are seeking to enter but readmission is not guaranteed and certain programs have special admission criteria.

Students who have less than a 2.0 cumulative UMaine GPA may be readmitted to their program of choice contingent on previous course work and related factors, or be referred to either the Undergraduate Advising Center in the College of Liberal Arts and Sciences or the Bachelor of University Studies (BUS) program in the Division of Lifelong Learning for information about alternative pathways to completing a UMaine degree. Students will be notified in all cases of the readmission decision.

Requests for re-admittance made fewer than 30 days prior to the start of the semester may not be processed in time to meet a returning student's academic and student-life needs, meaning that specific classes, housing options, and other services may no longer be available.

Time Limitations for Course Work: Some subject areas have changed dramatically over time. Courses completed 10 or more years before the date on which the student is seeking readmission will be subject to additional review. Courses determined to be missing important material reflecting the current state of knowledge in a given field will not be applied to the student's 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 <http://go.umaine.edu/reactivate-your-application-to-umaine/>. 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.

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 have the option of submitting 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 \$300 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 1st for fall semester enrollment and prior to January 1st 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 1st, for candidates who applied for the fall semester and by January 1st 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 1st. Students choosing to deposit before May 1st may request a refund in writing postmarked no later than May 1st. Deposits are not refundable after May 1st. Students accepted after May 1st 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 1st or two weeks from the date of acceptance if the acceptance is later than January 1st. Questions about the enrollment deposit should be directed to the Admissions Office.

New England Regional Student Program

The New England Board of Higher Education (NEBHE) has established the Regional Student Program (RSP) under which qualified residents of the region may receive reduced tuition rates when attending college in another New England state. The major chosen must be one that is not available in the student's home state (as approved by the public institution in the home state) and is available for the tuition reduction by the institution the student plans to attend. Students accepted in these programs pay 55% above resident tuition rate rather than the normally charged out-of-state tuition.

Eligible undergraduate programs begin during the student's first year of enrollment at the University. Current enrolled students who change their major to a regional major must notify the Office of Student Records. 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.

For a current listing of qualifying UMaine majors by state view the New England Regional Student Program Table. For complete details of the Regional Student Program, visit www.nebhe.org.

International Student Admission

The University of Maine welcomes applications from international students to be considered for degree program admission or conditional admission. The Office of International Programs is the admissions office for undergraduate international applicants. Applicants can find application information and instructions at <https://umaine.edu/international/> or at <http://apply.maine.edu/>. Accepted methods to apply include the Common Application, or the ApplyMaine Application. The telephone number of the Office of International Programs is (207) 581-3437 and the email address for international admissions questions is internationaladm@maine.edu.

Candidates for degree program admission are required to submit the completed application, official results of approved English language proficiency exam scores (if English is not the candidate's native language), and official copies of academic transcripts, grade reports, etc., along with a certified English translation. Educational records must include subjects studied by year, grades or percentage earned in year-end examinations, as well as copies of diplomas, degrees or certificates, and a description of the grading system. Applicants can find detailed English proficiency documentation and waiver information at www.umaine.edu/international/. Submitting SAT or ACT scores is suggested but not required. The Office of International Programs notifies students after their application is reviewed and informs them if they are academically admissible to the University. Admitted students must then submit appropriate financial documentation, before immigration documents are issued to them. Required financial documents include copies of bank statements and official affidavits of support that must be less than one year old, as well as completed and signed a financial declaration form. Financial documents must be in English and clearly indicate available funds.

Transfer students who have studied at schools in the United States for at least two years (in non ESL courses) are not required to submit English proficiency score. Transfer students from outside the U.S. must submit approved English language proficiency exam scores and original educational records, including academic transcripts, grade or mark sheets, diplomas, degrees,

certificates, etc.. The Office of International Programs may require admitted transfer students to order an external credential evaluation of their international credentials. Suggested external evaluation agencies are listed on the website of the Office of International Programs at www.umaine.edu/international/transfer_credit/.

Conditional admission will be offered to students whose academic background meets regular University of Maine admission standards but their English proficiency falls below the required level for degree program admission. Students will be offered admission to the UMaine Intensive English Institute, an English language preparation program. More information visit www.umaine.edu/iei.

International applicants are urged to start the admission process early. The Office of International Programs reviews applications on a rolling admissions basis. To ensure on campus room and board availability, the suggested deadline for Fall admission and enrollment confirmation is no later than May 1st.

All applicants are considered for international merit scholarships at the time of application review. No additional scholarship application is required.

International students and their dependents must purchase or provide proof of existing appropriate medical health insurance coverage in the United States that meets limits required by the University of Maine.

The Office of International Programs will not perform transfer credit evaluation of any transcripts from a college or university that were not included in a student's application for admission. Students are required to list the names and dates of attendance of all institutions (secondary and post-secondary) they have attended on their application for admission to the University of Maine. Omitting information on previous institutions attended is considered dishonest and a violation of the Student Code of Conduct to which we expect students, even those seeking admission to the University of Maine, to adhere. Students who submit new credentials for transfer credit evaluation, which have not been disclosed during the application process will be referred to the conduct process.

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 <https://umaine.edu/mlandc/placement-faqs/#language-placement>

Advanced Placement (AP)

The University of Maine awards credit for successful completion of most AP exams according to the 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.

Students that receive credit for Foreign Language course equivalent through the Seal of Biliteracy cannot receive credit through the Advanced Placement Examination for the same language.

Division of Lifelong Learning Admission

The University of Maine offers a variety of academic programs through the Division of Lifelong Learning. Courses are taught online, on campus, at selected off-campus sites using distance technology. Categories of enrollment include:

Non-degree Students:

Undergraduate students interested in taking University of Maine courses for personal or professional enrichment are advised to complete and submit the Online Registration Form. This form is not an application form for admission into the University of Maine. A confirmation letter will be sent to the student upon completion of the non-degree course registration form. Please contact the DLL Advising Center for assistance or stop by in person at Chadbourne Hall Rm. 122, for class schedules and registration information.

Non-degree graduate students interested in taking graduate level courses should complete the Graduate non-degree application.

Baccalaureate Students:

The Division of Lifelong Learning offers the Bachelor of University Studies adult completion degree which can be completed fully online or on-campus. Courses are offered during all terms- Summer, Fall, Winter and Spring. Students who desire additional information about the Bachelor of University Studies may visit <https://umaine.edu/universitystudies/> or email universitystudies@maine.edu. To apply for admission into UMaine, please visit: <https://go.umaine.edu/>.

Early College Programs (high school students)

Through a partnership between the Maine Department of Education and the University of Maine, qualified public high school students in Maine may earn up to 12 college credits per fiscal year (July 1 - June 30) tuition-free while in high school, and may enroll in course work during fall, spring, and summer terms. In addition, a reduced tuition rate of \$138.25 per credit is available to students attending Maine private high schools. The University of Maine is proud to be the first University of Maine System campus to recognize the importance of Early College Programs, including the signature online Academ-e program, Aspirations program (on campus or concurrent enrollment at a high school), and the Bridge Year program (CTE Centers).

In accordance with Maine statute, eligible students include:

Publicly funded high school students

Students who attend a high school or academy classified as a Private Schools Approved for the Receipt of Public Funds and who are not private pay tuition (taxpayer dollars pay tuition for public students to attend these schools such as Fryeburg Academy or Thornton Academy) Homeschool students who have registered with their local school district and the Maine Department of Education

International students who are living with a host family, attending school per a Superintendents agreement, and are NOT paying tuition to that school (for example exchange program students)

The UMaine Early College Program is committed to providing quality teaching and learning, college-level rigor and academic integrity; access and support to under-resourced communities and first-generation students; and multiple layers of support to ensure student success, including a comprehensive orientation experience and academic advising.

For more information: umaine.edu/earlycollege or contact us at: um.earlycollege@maine.edu or 207.581.8004.

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 Division of Lifelong Learning (207) 581-3142.

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.

(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.

Seal of Biliteracy

The University of Maine awards credit for successful certification of a Foreign Language when a student achieves the Seal of Biliteracy. The [Seal of Biliteracy Credit Table](#) outlines the course equivalents for the certification. Students should ensure that the High School Transcript with the Seal of Biliteracy are submitted when applying for admission to the University of Maine.

Students that receive credit for Foreign Language course equivalent through the Advanced Placement Examination cannot receive credit through the Seal of Biliteracy for the same language.

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	
The Maine Business School Accounting Finance Management Marketing International Business	B.S.	1	2	2 lab sciences				
Education and Human Development	B.S.							
Child Development and Family Relations	B.S.		2					
All education majors	B.S.		2				1	
Engineering	B.S.	Pre-Calculus			1	1		
School of Engineering Technology	B.S.	Trigonometry			S-1	1		
Liberal Arts and Sciences	B.A. / B.F.A.		2	1	1 additional lab science			
Liberal Arts and Sciences	B.S.	1		2 lab sciences including Chemistry or Physics				
Natural Science Forestry and Agriculture	B.A.	S-1	2	1	1 lab science			
Natural Science Forestry and 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.

Advanced Placement Credit Table

Official AP Score reports must sent directly from College Board to the University of Maine for processing.					
A minimum score of 3 is required unless otherwise noted.					
AP Exam	Required Scores	UM Equivalent	Credits Earned	Gen Ed Satisfied	Exceptions
African American Studies	3 to 5	HTY 100X	3	Social Cont/West Cult	
Art: Drawing	3 to 5				Based on portfolio review by the Art Department
Art: 2D Art & Design	3 to 5				Based on portfolio review by the Art Department
Art: 3D Art & Design	3 to 5				Based on portfolio review by the Art Department
Art: Art History	4 to 5	ARH 100	3	Cult Div/Artistic & Creat Exp	
Biology	3	BIO 100	4	Lab Science	Students in Biology, Botany, Medical Laboratory 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.
	4 to 5	BIO 100/200	8	Lab Science	
Calculus AB	3 to 5	MAT 126	4	Quantitative Lit	
Calculus BC		MAT 126/127	8	Quantitative Lit	
Chemistry	4	CHY 121/123	4	Lab Science	
Chemistry	5	CHY 121/123 & CHY122/124	8	Lab Science	
Computer Science A	3 or 4	COS 120	3	Quantitative Lit	
Computer Science A	5	COS 125	4	Quantitative Lit	
Computer Science Principles	3 to 5	COS 120	3	Quantitative Lit	
Economics: Macro	3 to 5	ECO 121	3	Social Contexts	
Economics: Micro		ECO 120	3	Social Contexts	

English Language & Composition	3	ENG 101	3		English Language and English Literature have the same equivalents.	
	4 to 5	ENG 101	3			
		ENG 129	3	Writing Intensive		
English Literature & Composition	3	ENG 101	3			
	4 to 5	ENG 101	3			
		ENG 129	3	Writing Intensive		
Environmental Science		EES 100	3	Pop & Environ		
Foreign Lang: Chinese Language and Culture		CHI 200X	6	Cultural Diversity		
Foreign Lang: French Language and Culture		FRE 201/202	6	Cult Div/Wrt Intn		
Foreign Language: German Language and Culture		GER 203/204	6	Cultural Diversity		
Foreign Language: Latin		MLC 200X	6	Cultural Diversity		
Foreign Language: Spanish Language and Culture		SPA 203/204	6	Cult Div/Wrt Intn		
Foreign Language: Spanish Literature	3 to 5	SPA 307	3	West Cult/Cult Div/Wrt Intn		
		SPA 308	3	Cultural Diversity		
Government & Politics: Comparative		POS 241	3	Social Cont/Cult Div		
Government & Politics: U.S.		POS 100	3	Social Contexts		
History, European		HTY 105/106	6	West Cult/Soc Cont		
History, U.S.		HTY 103/104	6	West Cult/Soc Cont		
History, World		HTY 100X	3	Cultural Diversity		
Human Geography		GEO 200X	3	Cult Div/Pop & Env		
Music Theory		MUY 101	3	Artistic & Creat Exp		

Music Theory	5		4		By special arrangement with the Music Department
Physics 1	3 to 5	PHY 107 or 111	4	Lab Science	Students in the Engineering majors are required to take UMaine PHY 121 and 122 and would meet those requirements with AP Physics C-Mechanics and Physics C-Elect/Magnetism.
Physics 2		PHY 108 or 112	4	Lab Science	
Physics B		PHY 111/112	8	Lab Science	
Physics C: Elec & Magnt		PHY 122	4	Lab Science	
Physics C: Mechanics		PHY 121	4	Lab Science	
Pre-Calculus		MAT 122	4	Quantitative Lit	
Psychology		PSY 100	3	Social Contexts	
Statistics		STS 132	3	Quantitative Lit	

College Level Examination Program Table

The University of Maine College Level Examination Program Table (15 credits limitation)

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.

Name of Examination	Passing Score	Substitutes for	Credit Hours
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
College-Level Mathematics	50	MAT 100X	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, Educational	50 - 62	EHD 200X	3
Psychology, Educational	63-80	EHD 203	3
Psychology, Introductory	50	PSY 100	3
Sociology, Introductory	50	SOC 101	3
Western Civilization I: Ancient Near East to 1648	50	HTY 105	3
Western Civilization II: 1648 to Present	50	HTY 106	3

** Credits are contingent upon approval of the essay portion by the English Department.

Defense Subject Standardized Test Credit Table

DSST (Formerly DANTES)	Required Score	UM Equivalent	Credits Earned	Gen Ed
Business Ethics and Society	scoring from 400 to 800	MGT 100X	3	
Civil War & Reconstruction	scoring from 400 to 800	HTY 100X	3	
Computing & Information Tech	scoring from 400 to 800	COS 100X	3	
Criminal Justice	scoring from 400 to 800	CRJ 100X	3	Social Contexts
Ethics in America	scoring from 400 to 800	PHI 100X	3	
Health and Human Development	scoring from 400 to 800	KPE 100X	3	
History of Vietnam War	scoring from 400 to 800	HTY 100X	3	
Intro Law Enforcement	scoring from 400 to 800	INT 100X	3	
Intro. World Religions	scoring from 400 to 800	ANT 100X	3	
Introduction to Business	scoring from 400 to 800	MGT 101	3	
Management Infor. Systems	scoring from 400 to 800	BIS 100X	3	
Money and Banking	scoring from 400 to 800	ECO 100X	3	
Substance Abuse	scoring from 400 to 800	INT 100X	3	

International Baccalaureate Credit Table

The University of Maine grants credit for International Baccalaureate Exams equivalent to courses with a minimum exam score. **All exams must be taken at the HIGHER level with a grade of 5, 6, or 7.** No credit will be awarded for exams taken at the Standard level.

IB Exam	Required Score	UM Equivalent	Credits Earned	Gen Ed
Biology HL	scoring from 5 to 7	BIO 100	4	Lab Science
Business & Management HL	scoring from 5 to 7	MGT 101	3	
Chemistry HL	scoring from 5 to 7	CHY 100X	3	
Design technology HL	scoring from 5 to 7	GEE 100X	3	
Economics HL	scoring from 5 to 7	ECO 120	3	Social Contexts
English	scoring from 5 to 7	ENG 101	3	
English A: Lang & Liter HL	scoring from 5 to 7	ENG 100X	3	Cult Diversity/Writing Intensi
English A: Literature HL	scoring from 5 to 7	ENG 101	3	
English A1 HL	scoring from 5 to 7	ENG 101	3	
Film HL	scoring from 5 to 7	NMD 100X	3	Artistic & Creative Express
French B HL	scoring from 5 to 7	FRE 100X	3	Cultural Diversity
Geography HL	scoring from 5 to 7	GEO 100	3	Cult Diversity/Pop & Environ
German B HL	scoring from 5 to 7	GER 203 & GER 204	6	Cultural Diversity
History Africa & Mid East HL	scoring from 5 to 7	HTY 100X	3	Social Context/Cult Diversity
History Americas HL	scoring from 5 to 7	HTY 100X	3	West Cult Trad/Social Context
History Asia/Oceania HL	scoring from 5 to 7	HTY 100X	3	Social Context/Cult Diversity
History Europe HL	scoring from 5 to 7	HTY 100X	3	West Cult Trad/Social Context
History Europe/Midd East HL	scoring from 5 to 7	HTY 100X	3	West Cult Trad/Social Context
Korean A: Lang and Lit HL	scoring from 5 to 7	MLC 100X	3	Cultural Diversity
Latin HL	scoring from 5 to 7	LAT 101	3	
Math Analysis and Appro HL	scoring from 5 to 7	MAT 100X	3	Quantitative Literacy
Mathematics HL	scoring from 5 to 7	MAT 100X	3	
Nepali A: Literature - HL	scoring from 5 to 7	ENG 100X	3	Cultural Diversity

Physics HL	scoring from 5 to 7	PHY 111	4	Lab Science
Psychology HL	scoring from 5 to 7	PSY 100X	3	Social Contexts
Spanish B HL	scoring from 5 to 7	SPA 204	3	Cultural Diversity
Theater Arts	scoring from 5 to 7	THE 100X	3	Artistic & Creative Express
Visual Arts HL	scoring from 5 to 7	ART 100X	3	Artistic & Creative Express

New England Regional Student Program Table

Residents of states marked with an "X" are eligible for the RSP tuition break at The University of Maine in the programs listed below.

Major (subject to review & change)	Major Code	CT	MA	NH	RI	VT
Athletic Training*	ATR-BS				X	
Biomedical Engineering	BIE-BS/BEN-BS	X	X			
Botany	BOT-BS/BA		X	X		
Chemical Engineering	CHE-BS					X
Child Development and Family Relations	CHF-BS		X			
Construction Engineering Technology	CTE-BS		X	X	X	X
Electrical Engineering Technology	BET-BS	X		X	X	
Engineering Physics	EPS-BS				X	
Financial Economics	FIE-BS/BA					X
Food Science & Human Nutrition	FSN-BS			X	X	
Forestry	FTY-BS	X	X		X	
Human Dimensions of Climate Change	HDC-BA	X	X	X	X	X
Marine Science	MAS-BS	X	X			X
Mechanical Engineering Technology	BMT-BS		X		X	X
New Media	NMD-BA	X		X		X
Outdoor Leadership concentration in Kinesiology & Physical Education	KPE-BS OUT EDUC	X			X	
Parks, Recreation & Tourism	PRT-BS	X	X		X	
Sports Management	SPT-BS				X	
Survey Engineering Technology	BST-BS	X	X	X	X	X
Sustainable Agriculture	SAG-BS	X	X			
Sustainable Materials and Technology	SML-BS	X	X		X	X
Wildlife Ecology	WLE-BS	X	X			
Zoology	ZOL-BS/BA	X	X			

* The Athletic Training undergraduate degree program no longer admitting new or transfer students. Due to changes in national accreditation requirements, licensure in athletic training is now available only at the graduate level.

Please check the [New England Regional Student Program Website](#) for the most up to date information.

Seal of Biliteracy Credit Table

Seal of Biliteracy Credit Table				
Language Certified	UM Transfer Equivalent	Credit Hours	Gen Ed Satisfied	Note
American Sign Language	ASL 200X	6	Cultural Diversity and International Perspectives	1,2
Arabic	ARA 200X	6	Cultural Diversity and International Perspectives	1,2
Chinese	CHI 200X	6	Cultural Diversity and International Perspectives	1,2
French	FRE 201/202	6	Cultural Diversity and International Perspectives	1,2
German	GER 203/204	6	Cultural Diversity and International Perspectives	1,2
Native American Studies	NAS 202/203	6	Cultural Diversity and International Perspectives	1,2
Spanish	SPA 203/204	6	Cultural Diversity and International Perspectives	1,2
Other Languages	MLC 200X	6	Cultural Diversity and International Perspectives	1,2

¹If recipient of the Seal of Biliteracy were to be evaluated as Advanced-Low or higher on the ACTL OPI or OPIc proficiency test(s), additional three credits will be awarded at the 300 level.

²Students that receive credit for Foreign Language course equivalent through the Advanced Placement Examination cannot receive credit through the Seal of Biliteracy for the same language.

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. Financial Aid Advisors are available by appointment between 8:00 a.m. and 4:30 p.m. Monday, through Friday. Appointments can be booked through umaine.edu/stuaid/advising.

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 umaine.edu/stuaid, contact the office at (207) 581-1324, or via e-mail (umfinaid@maine.edu).

Merit Scholarships

The Admissions Office awards scholarships to new first-year and transfer undergraduate students based on academic performance. For specific eligibility for Merit Scholarships visit the Office of Admission's website at 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 - Awarded based on the Expected Family Contribution (EFC) from the FAFSA, to eligible undergraduate students enrolled in a degree program, and do not have to be repaid.

Federal Supplemental Grants - Awarded based on federal need from the FAFSA, to eligible undergraduate students enrolled in a degree program at least half-time enrollment, and do not have to be repaid.

University Grants - Awarded based on federal need from the FAFSA, to eligible undergraduate students enrolled in a degree program at least half time enrollment, and do not have to be repaid.

Scholarships - 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 - Awarded based on federal need from the FAFSA, to eligible undergraduate 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) - Available through the U.S. Department of Education to eligible undergraduate and graduate 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 Entrance Counseling and a Loan Agreement/Master Promissory Note (MPN) before the loan proceeds will be released. The Entrance Counseling and Loan Agreement are completed electronically at studentaid.gov.

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 umaine.edu/stuaid/loans, the interest begins to accrue or can 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 undergraduate credits, or 3 or more graduate credits) 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 through the end of the Add/Drop period each semester; financial aid eligibility is recalculated and offers are adjusted if necessary. The student is notified by email if the financial aid offer 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 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 places limits on the total amount that can be borrowed by any student, called "aggregate" limits. These limits are specified by Federal Student Aid on their website <https://studentaid.gov/understand-aid/types/loans/subsidized-unsubsidized>

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 FSA ID.

The FAFSA may be completed online at fafsa.gov. For prior year applicants, some information will be "pre-filled" from a prior year's application by using their FSA 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 FSA ID to electronically sign the FAFSA or a paper signature page can be printed and will then need to be signed and mailed to the address provided.

Certain types of financial aid, including University Grant, Federal Supplemental Educational Opportunity Grant, and 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 FAFSA 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 return, your parent's official tax return 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 the document due date which you will be notified of in writing from the Office of Student Financial Aid. 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 submitting the FAFSA, 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 3-5 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.

Once the student's file is complete, an offer of financial aid will be made available to the student. The student should accept (or decline) 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 Offers

Changes to financial aid can occur even after it 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 offer is adjusted. Changes to offers 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 University

Summer University is considered to be the end of the University's academic year. To be eligible for Summer University aid, students must have applied for federal financial aid for the previous year. Generally, financial aid is limited to Federal Pell Grant (if eligible) and/or any remaining Federal Direct Loan eligibility (subsidized and/or unsubsidized). Federal Work-Study may also be available, and requires a separate application that is available early in the spring semester and must be turned in prior to the deadline listed on the application. In addition, students who did not enroll in 30 credits during the Fall, Winter, and Spring semesters may have remaining aid available for the Summer. Students are encouraged to contact the Office of Student Financial Aid 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. This policy is available on the Office of Student Financial Aid website at <https://umaine.edu/stuaid/resources/policies/withdrawing/>

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. This policy is available on the Office of Student Financial Aid website at <https://umaine.edu/stuaid/resources/policies/withdrawing/>.

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 a financial aid advisor (appointments can be booked through umaine.edu/stuaid/advising) 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.

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 caused undue hardship. Appeals are considered by a committee. Please use the SAP Undergraduate Appeal Form (available at 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 2023/2024.](#)

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

Invoices and Due Dates

Billing statements are provided online and are available through MaineStreet. Charges are calculated using pre-registrations, room sign-up information, and data supplied by the Admissions Office. The student will be provided online billing statements 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 online. Instructions for adding an authorized user can be found at umaine.edu/bursar/user/.

Fall 2023 billing statements will be available online beginning in mid-July, and will be due September 15th.

Spring 2024 billing statements will be available online beginning in early December, and will be due January 15th.

Summer 2024 billing statements will be available online in mid-April, and the charges for each class will be due by May 15.

Late Payment Fee

A \$50 late payment fee will be assessed monthly to students who fail to pay their bills or fail to notify Student Business Services 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 Student Business Services.

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 Maine Street (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, loans). Instructions for entering anticipated resources can be found at 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 Maine Street to notify Student Business Services 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 Student Business Services by the payment due date. If these items are received by the payment due date shown on the statement, no late fee will be assessed. Please visit the following link for full details in instruction on the 3rd party billing process and procedure <https://umaine.edu/bursar/3rd-party-billing/>

Payment Plan

For those who find it convenient to make monthly payments, the University of Maine is pleased to offer either a 4 installment payment plan or a 5 installment payment plan. Enrolling in a payment plan is easily done by self-service through the MaineStreet student center or TouchNet Authorized user access.

Enrolling in a payment plan requires payment of an enrollment setup fee of \$30 and the initial payment (20% down payment for the 5 installment plan or 25% down payment for the 4 installment plan) at the time of enrollment. The Fall 2023 payment plan will be available for self-service enrollment after July 1. The Spring 2024 payment plan will be available for self-service after December 1. For more information, please visit <https://umaine.edu/bursar/payment-options/> Please call Student Business Services

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 Student 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 an enrollment level greater than your current enrollment. If you are eligible to receive a refund of excess financial aid, this could delay your refund. For more information please visit 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:
Classes with duration of less than 12 weeks in length.

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 12, 2023 for Fall 2023

January 30, 2024 for Spring 2024

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:

"Standard" Full Semester classes and "Non-standard" classes of 12 weeks or more:	
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%

"Non-Standard" short classes - classes of less than 12 weeks in length:	
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:

"Standard" Full Semester Classes:	
Withdrawal	Percent of Refund
Prior to the end of the Drop Period <ul style="list-style-type: none"> • Fall 2022- September 12, 2022 • Spring 2023 - January 31, 2023 	100%
After the Drop Period	0%

"Non-standard" classes:	
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. After June 1 (January 1 for Spring), room charges for students withdrawing from a University of Maine System institution are non-refundable. 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 monthly \$50.00 late fee is assessed.

Delinquent students will be subject to the following administrative sanctions:

They must contact Student Business Services before receiving an official certified copy of their transcript and diploma.

They may be prevented from registration or pre-registration at any university in the University of Maine System.

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.

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:

"Request for Change in Tuition Status" cover sheet and application must be filed with the Bursar at The University of Maine, Student Business Services, 5781 Wingate 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.

The request will be forwarded to the University of Maine System (UMS) Residency Committee for review. If the committee'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 to 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).

The President (or designee) will issue a final decision within 30 days.

In the event that the 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 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 75 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

Canadian Resident Tuition Rate

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

Department of Veteran Affairs' "Covered Individual Policy":

In compliance with United States Code section 3679 of title 38, any individual who is entitled to educational assistance under chapter 31, Vocational Rehabilitation and Employment, or chapter 33, Post-9/11 GI Bill® benefits will be permitted to attend or participate in the course of education during the period beginning on the date on which the individual provides to the educational institution a certificate of eligibility for entitlement to educational assistance. A certificate of eligibility can also include a "Statement of Benefits" obtained from the Department of Veterans Affairs' eBenefits website, or a VA form 28-1905 form for chapter 31 authorization purposes.

The University of Maine will not impose any penalty, including the assessment of late fees, the denial of access to classes, libraries, or other institutional facilities, or the requirement that a covered individual borrow additional funds, on any covered individual because of the individual's inability to meet his or her financial obligations to the institution due to the delayed disbursement funding from the VA under chapter 31 or 33.

This agreement will terminate on the date on which payment from the VA is made to the institution or 90 days after the date the institution certified tuition and fees following the receipt of the certificate of eligibility, whichever date is most beneficial to the covered individual. *GI Bill® is a registered trademark of the U.S. Department of Veterans Affairs (VA). More information about education benefits offered by VA is available at the official U.S. government website at www.benefits.va.gov/gibill.*

Explanation of University Fees

Mandatory Fees

Activity Fee: Activity fee funds are used by the Student Government associations to support various activities the Maine Campus student newspaper, the student radio station (WMEB) and the student operated New Media research and production house, ASAP Media Service. The fee is \$78.00 per semester, if you are registered for 6 or more credit hours. This fee will only be assessed for credit hours taken on the University of Maine campus.

Technology Fee: All students are charged a Technology Fee of \$15 per credit hour. This fee supports the campus technology and educational environment necessary to meet the technological demands of the University of Maine community.

International Student Health Insurance: University of Maine, in collaboration with the University of Maine System, is pleased to offer an affordable International Student Health Insurance Plan for 2023/2024.

All international undergraduate students enrolled are required to show proof of adequate health insurance coverage. An annual health insurance charge of \$2,820 will be billed to eligible students in the fall semester. 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, 2023 through July 31, 2024. The spring semester only coverage period is January 1, 2024 to July 31, 2024. More detailed information is available online: <https://umaine.edu/bursar/insurance/>

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 Residence Life, by email at um.reslife@maine.edu or by phone at 581-1406 with any questions concerning this fee.

Program Fees

Nursing Kaplan Fee: A fee of \$165 for each of the last four semesters of the undergraduate Nursing curriculum will be charged. This covers the use of the Kaplan Integrated product, which is a required learning and assessment tool used in the School of Nursing.

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.

Spatial Program Fee: A fee of \$100 per course will be charged for all Spatial Information Science and Engineering (SIE) course designators within the School of Computing and Information Science. The Spatial Program Fee is to cover the differential costs associated with the Spatial Information Science and Engineering Courses.

Applied Music Course Fee: Music majors and some music minors will be charged a fee of \$100 for half hour private lessons or \$200 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.

Sonia Fee: The School of Social Work uses Sonia LIVE as a comprehensive online data management system for all student activities related to the field practicums. Students enrolled in the BSW and MSW programs are required to pay a \$25 fee each time they are in a field placement. The Sonia system will enable them to complete field applications, access information about field sites, and store their field evaluations. BSW students will be charged one time at the start of their senior year. If they enter the MSW program as an Advanced Standing student, they will be charged an additional \$25 at the start of their specialization year field practicum. MSW students who do not have a BSW will be charged a fee for each of their two field placements, both the generalist year and specialization year field practicums (\$50 total). Students will have lifetime access to the Sonia system.

Taskstream-Tk20 Fee: The College of Education uses TaskStream-Tk20 as a comprehensive online data management system for all Academic Programs related to teacher or administrator certification. Students enrolled in any of these programs are required to purchase an account with Taskstream-Tk20. This account will enable them to complete Key Assessments, build professional portfolios, and provide information regarding field experiences, student teaching and administrative internships. There is a one-time \$139.00 fee for a TaskStream-Tk20 account, which will be applied in Maine Street once a student starts a term in a participating program. The account will be active for seven years after the date of activation.

Math Placement Exam Fee: The University of Maine requires an ALEKS Placement, Preparation and Learning (ALEKS PPL) Assessment to determine readiness for mathematics courses. ALEKS PPL is a web-based program that uses artificial intelligence to map a student's strengths and weaknesses. More information is available at: <https://umaine.edu/clasadvisingcenter/math-placement-exam/>. Students will be billed \$25 for using the ALEKS Placement Assessment. This fee appears on their student account, viewable in MaineStreet, as a Math Placement Exam fee. This small fee covers three possible attempts as well as access to one Prep and Learning Module. In the event that you need to access an additional Prep and Learning Module, please reach out to your advisor.

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

Estimated Expenses

The University of Maine Expenses for Fall 2023/Spring 2024

EXPENSES & FEES FOR MATRICULATING (DEGREE PROGRAM) STUDENTS

Click on the following link for Room and Board Rates: <https://umaine.edu/housing/rates-policies/umaine-2023-2024-room-board-rates/>

EXPENSE OR FEE	SEMESTER	ANNUAL	ONE-TIME
TUITION-Based on 15 Credits per Semester			
MAINE & CANADIAN RESIDENT \$400.00/CREDIT HOUR	\$6,0000.00	\$12,000.00	
NON RESIDENT \$1,158.00/CREDIT HOUR	\$17,370.00	\$34,740.00	
NEW ENGLAND EXCHANGE (NEBHE) \$700.00/CREDIT HOUR	\$10,500.00	\$21,000.00	
STUDENT FEES -Based on 15 Credit/Semester			
Technology Fee \$15/Credit Hour	\$225.00	\$450.00	
Student Activity Fee*	\$78.00	\$156.00	
*This fee will only be assessed for credit hours taken on the university of Maine campus			
PROGRAM TUITION DIFFERENTIAL - based on 15 Credits per semester			
Maine Business School	\$309.00	\$618.00	
Engineering	\$370.00	\$740.00	
Nursing	\$397.00	\$794.00	
**e-Rates - based on 15 Credits per semester			
MAINE & CANADIAN RESIDENT \$388.00/CREDIT HOUR	\$6,000.00	\$12,000.00	
NON RESIDENT \$500/CREDIT HOUR	\$7,500.00	\$15,000.00	
NEW ENGLAND EXCHANGE (NEBHE) \$500/CREDIT HOUR	\$7,500.00	\$15,000.00	
OTHER FEES			
International Student Health Insurance Plan - Annual	\$2,820.00	\$2,820.00	
Late Payment Fee per month	\$50.00		
NON-REFUNDABLE CHARGES/CREDITS			
ADVANCE DEPOSIT (CREDIT)			\$50.00

** Alternative tuition rates apply to students enrolled in online-only degree/certificate programs through UMaineOnline.**

BOOKS AND SUPPLIES APPROXIMATELY \$1,000.00 PER YEAR

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

Auxiliary Enterprises

Auxiliary Enterprises provides on-campus housing for students in residence halls at both the Orono and Machias campuses as well as operates University of Maine Dining that provides dining services for the entire Orono campus community. In addition to these services, the Auxiliary Enterprises umbrella includes University Park for students/faculty with families, the Bookstore, Bear Necessities Shop, Parking Services, Printing and Mailing Services, Events and Hospitality, and the Children's Center.

Housing Information and Overview

The University of Maine provides on-campus housing in 18 residence halls, ranging from 38 to 300 residents in each hall. UMaine Machias provides on-campus housing in two residence halls. 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 \$35 per semester in laundry funds included in the room rate
- have several living/learning lifestyle options for first year-students (see <http://umaine.edu/reslife/themed> for more information)
- Suite Style (for upper class only)
- Graduate

Residency Requirement

Living on campus maximizes students' opportunities for social, cultural and extracurricular involvement and is positively linked to students' persistence toward attaining a degree. The University of Maine believes that residence hall living is an educational opportunity that all new students should experience. Living on campus is not required for a new admitted first-year student under any of the following criteria: (1) aged 21 or older; (2) a veteran or transfer student; (3) living with a parent or legal guardian within easy commuting distance (35 miles); (4) exceptional circumstances that do not permit them to meet the requirement.

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

Housing Eligibility requires that all

- undergraduate students must be at least 17 years old and 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 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 Commuter 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 Commuter 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. Please visit the MaineCard Online Office at <https://umaine.edu/mainecard/online-card-office/>.

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 ****UNFORTUNATELY BLACK BEAR BUCKS ARE NO LONGER ACCEPTED****
- in the library for copying
- in most clusters for printing
- in the Collins Center for the Arts
- in the residence hall laundry facilities
- at Maine Bound
- 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

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

Located on the ground floor 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 and abuse prevention resources and assessment, general health and wellness support, hazing prevention workshops, and a great variety of programs and events through the peer coaching program called Live Well. Outreach, education and prevention programs are also offered in the Mind Spa located with the Student Wellness Resource Center in Room 149 of the Memorial Union. Students may attend daily programs or simply walk in during open hours. Contact the Student Wellness Resource Center/Mind Spa at 207-581-1423 or visit them on the web at www.umaine.edu/wellness.

Bodwell Center for Service and Volunteerism

The Bodwell Center for Service and Volunteerism is currently located in the former UCU Building on Rangeley Road on campus. The Center is the hub for student volunteerism, service learning and much more. Center activities include: Alternative Spring Break, Black Bear Mentors, Black Bear Tutors, Black Bear Exchange (food pantry and clothing exchange on campus), Maine Day, AmeriCorp VISTA, blood drives and ongoing community service opportunities. Contact the Center at 207-581-3091 or at www.umaine.edu/volunteer.

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 (including e-Sports), group fitness classes, personal training, Sport Clubs, children's programs, and the latest in fitness equipment (treadmills, ellipticals, stationary bicycles, free weights and weight machines, etc.) at the NBSRC Center. The indoor climbing wall is the main feature of the Maine Bound Adventure Center which also offers outdoor equipment rental, and exciting and cutting-edge local and expedition outdoor recreation opportunities. Contact Campus Recreation at 207-581-1082 or Maine Bound at 207-581-1794. Visit their website www.umaine.edu/campusrecreation.

Career Center

Located on the third floor of the Memorial Union and is part of the Division of Student Life, the Career Center offers essential services for students as they prepare for their chosen career. Résumé advice; interview strategies and 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 Career Center maintains information on admission requirements of selected professional schools and application forms for standardized national exams, and other useful information. For more services and up-to-date information, visit their web site: www.umaine.edu/healthcareers/. For more information about pre-law options and services, visit the web site www.umaine.edu/career/studentalumni/prelaw.html. An on-line job search for student jobs on and off campus is also available through the Career Center. Contact the Career Center for a consultation 207-581-1359, simply drop in, or visit the website: www.umaine.edu/career.

Center for Student Involvement (CSI)

The Center for Student Involvement, part of the Division of Student Life, is located on the ground floor of the Memorial Union. CSI is comprised of three units: Fraternity and Sorority Affairs, Campus Activities, and Student Organizations and Leadership Development.

Fraternity and Sorority Affairs serves in an advisory role for all recognized (and colonizing) social fraternities and sororities. They also develop and deliver programs that promote individual and organizational growth, health and safety. Assistance with chapter management, recruitment (including formal recruitment for all sororities), new member education, community service, event registration/management and many other support and assistance functions (including a Greek organization dashboard) come from Fraternity and Sorority Affairs. For more information, visit the website at www.umaine.edu/greek, visit the office or call 207-581-4183.

Campus Activities Provides social, educational and entertaining programs for students throughout the academic year, focusing primarily on Thursday through Saturday nights. These events and programs include but are not limited to: movies, concerts, comedians, LATE Nights, music performances, holiday activities/celebrations and many others. The s-Sports Arena is a joint operation between Campus Activities and Campus Recreation, and is located in the Memorial Union. It features all the latest games and equipment for free use by students. The Campus Activities Board (CAB) is a student group that works closely with Campus Activities and all students are invited to participate in CAB. Contact Campus Activities at 207-581-1793, at www.umaine.edu/case or in their offices on the ground floor of the Memorial Union.

Student Organizations and Leadership Development (SOLD) works with student organizations (and students who want to form/create a student organization) to help them plan events, manage their members (ex. help write their constitution/bylaws, elections, etc.), and provide leadership and transition training. There are more than 200 student organizations at UMaine and they include political groups, religious/faith groups, service groups, sport clubs, and so many other types of student organizations. The annual student leadership conference is offered to foster collaboration and to support the development of new student leaders. The annual student organization fair is typically offered outdoors on the Mall during the first week of classes so look for that great opportunity to connect with a great student group.

Community Standards, Rights and Responsibilities (CSRR)

The Office of Community Standards administers the UMS Student Conduct Code through referrals to its office from around campus and the community. 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 <https://umaine.edu/communitystandards/>.

Commuter/Non-Traditional Student Programs (CNTSP)

The Commuter/Non-Traditional Student Program, located in the Wade Leadership Center on the ground floor of the Memorial Union, provides personal advising, support and referral services, as well as being the home-away-from-home for many non-residential and non-traditional students. For additional information call 207-581-1420 or visit the web site at 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. Judy 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 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, Spring and Summer 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 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.

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

Counseling Center

The Counseling Center staff consists of Licensed Psychologists, Licensed Clinical Social Workers, and Doctoral and Masters level Interns that provide free, short term, confidential and free group and individual counseling sessions and workshops for undergraduate students enrolled in 6 or more credits. Due to the impact and/or aftermath of the recent Pandemic the method for delivering services varies or may be subject to change. Please visit the website for up- to-date information about services, hours and procedures for making an appointment: www.umaine.edu/counseling. Call 207 581-1392 to obtain information or leave a message. The Counseling Center is located on the east side of the Cutler Health Center building.

If you experience an emergency and are unable to reach the Counseling Center at 207 581-1392, you may contact UMaine Police at 207 581-4040, Maine Crisis Services at 1 888 568-1112, the National Suicide Prevention Lifeline (988), go to the nearest Emergency Department or call 911.

The Counseling Center website has many user friendly resources and links to other services, to access these, please visit our website at: www.umaine.edu/counseling.

Information Technology

The University of Maine System's Department of Information Technology (UMS:IT) is committed to providing and supporting the highest quality technology-based services for UMaine students. As the University's central technology support organization, UMS:IT strives to provide timely and efficient services. UMS:IT supports the University's land-grant and sea-grant missions of creating and disseminating knowledge to improve the lives of its students and Maine citizens through teaching, basic and applied research, and public service activities. UMS:IT is also responsible for coordinating technology services provided to The University of Maine campus by the University of Maine System. UMS: IT's UMaine main office is located at 12 Shibles Hall.

UMS:IT List of Locations & Services:

IT Support Services Center (Fogler Library - Room 130)

- Walk-in, phone, LiveChat, and Email assistance for UMS accounts
- (Google apps, MaineStreet, networking/wireless access, Brightspace, etc.)
- Connecting and accessing UMS and UMaine resources
- Assistance downloading and installing UMS and UMaine licensed software for PC and Mac operating systems.
- For more information or to request support
- Phone: 800-696-4357
- Email: help@maine.edu
- Web: itsupport.maine.edu

Student IT Computer and Software Applications available

- In-Person Computer devices:
- 1st Floor at the Fogler Library Information Commons.
- Both PC and Mac devices are provided in these locations.
- Devices feature all Student available UMS and UMaine Licensed software for use
- Remote Access Computer devices:
- UM Remote Labs

- Windows devices are available for remote access
- All Remote Access Computers feature all Student available UMS and UMaine Licensed software for use
- UMS and UMaine Student licensed software available for download and install on your device includes:
- Visit: UMaine IT Student Software
- MS Office365, ArcGIS, JMP, SAS, SPSS, Mathematica, MatLab, Minitab, ChemDraw.
- Remote Access VPN

Student Printing (Papercut pay-for-print Services)

- Each student receives \$16 in print funds per semester.
- Funds are applied to student MaineCard
- Funds are only available for printing and copying at UMS:IT printers
- Unused funds at the end of each semester are not carried forward
- Visit the UMaine IT website at Managed Print Services for instructions on printing from a personal device, UMS email, or via a mobile device.

Media Services (19 Shibles Hall)

- General classroom technology equipment support including audio and video equipment assistance.
- Video and web conferencing support for classes and meetings.
- Support for Events and Hospitality as well as other events on campus.
- Equipment-On-Loan at Fogler Library, Circulation Desk
- Reserve Audio Visual equipment, call the Fogler Library Circulation Desk at 207-581-1666.
- A valid MaineCard is required to sign out AV Equipment.
- For more information or to request support
- Phone: 581-2500
- Email: um-itsupportservices-media-group@maine.edu
- Web: itsupport.maine.edu

Student Accessibility Services

The mission of Student Accessibility Services (SAS) is to collaborate with students and campus partners to create an inclusive university experience for students with disabilities. We equip students with accommodations, remove barriers to educational access, and connect students with campus resources. Students with physical, mental health, learning, and other disabilities may request accommodations by contacting SAS to engage in the interactive accommodation process. Examples of accommodations include testing accommodations, alternative format textbooks, note takers, classroom relocation, other auxiliary aids, and housing accommodations. For more information please contact Student Accessibility Services via phone at 207.581.2319 or visit the website at www.umaine.edu/studentaccessibility. It is recommended that new and transfer students who have had accommodations at their previous institutions reach out to SAS before their first semester begins. SAS offices are located on the ground floor of the Memorial Union.

Division of Student Life

The Division is headed by the Vice President for Student Life and Inclusive Excellence and Dean of Students. The entire Student Life staff is dedicated to serving students as advocates, as seasoned professionals who can offer them counsel and advice, and also as "go-to" people who can help them cut through red tape. The Division of Student Life also maintains the Student Handbook. 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. For additional information call 207-581-1406 or visit the web site at www.umaine.edu/studentlife.

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.

Ombudsperson

The Ombudsperson for UMaine students is in the Student Life 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.

Religious Life Team

Religious programming, worship information, and connections to the faith-based student groups and community religious groups are provided. More than a dozen active student organizations are on campus. Chaplains and other religious representatives are available for counseling and/or instruction. For more information call 207-581-1406 or visit our web site at www.umaine.edu/studentlife.

Diversity and Inclusion

The Office for Diversity and Inclusion (ODI) serves as a vital and integral resource for students and employees in the areas of equity, inclusion and diversity. The office is dedicated to: 1) supporting University of Maine students from historically underrepresented identities, including but not limited to: sexuality, race, gender identity, spirituality, ethnicity, ability, religion, nationality, socio-economic status, and others; and 2) providing awareness and education to the entire university community around issues of equity, diversity, inclusion and privilege.

ODI addresses these priorities by providing safe, welcoming centers and through regular celebratory, educational and thought provoking offerings including but not limited to: Safe Zone and Inclusion training programs, Lunch and Learn sessions, panel discussions, and outreach to students, staff and faculty.

Through their presence in the Rainbow Resource Center, the Intersectional Feminist Resource Center and the Multicultural Student Center, they serve as a visible hub for students. The ODI reaches out across our campus and into the surrounding community as well in order to help create a climate of respect, of celebration of difference, and of well-being and safety.

Intersectional Feminist Resource Center (IFRC)

The IFRC is located in the Memorial Union. The Intersectional Feminist Resource Center (IFRC) supports and empowers students of all identities and backgrounds at the University of Maine. The IFRC strives to provide education around feminist topics including, and not limited to, sexual health and wellness in a space that is free from judgement and is open to individual experiences and expressions. In addition, the IFRC connects students with information about support services in the area. The center is dedicated to creating a more inclusive future through programming and events grounded at the intersections of feminism and social justice, while breaking binaries, dismantling systems of oppression, and forging connections on an individual and campus-wide level.

Multicultural Student Center (MSC)

The MSC is located on the 3rd floor of the Memorial Union. The Multicultural Center serves a community of culturally diverse students. We are a resource and an advocate for traditionally underrepresented populations. The Center empowers all students and their organizations to create a vibrant and inclusive Maine community. Through various programs, the center explores critical issues on campus about race, class, ethnicity, nationality, culture, gender, and how to best support the success of students from marginalized communities and cultures. Through the Multicultural Center we provide: A community that embraces diverse backgrounds, and appreciates the intersection of multiple cultural identities *A safe and welcoming space for relaxation, meetings, studying.

*Educational, Cultural and Social Programs *Extensive campus and community resources

Rainbow Resource Center (RRC)

The RRC is located in the Memorial Union. The Rainbow Resource Center (RRC) empowers and increases the visibility of Lesbian, Gay, Bisexual, Transgender, and Queer (LGBTQ) people by promoting equality and inclusiveness at the University of Maine. The RRC strives to maintain an open, safe, and supportive environment for all students, staff, faculty and alumni and provide educational opportunities, information, and advocacy services. We are committed to build an inclusive campus community that does not merely tolerate, but respects and honors all individuals at the University of Maine. We envision a community where all live in equality.

Division of Student Life

The Division is headed by the Vice President for Student Life and Diversity and Inclusive Excellence. He is also the Dean of Students. The entire Student Life staff is dedicated to serving students as advocates, as seasoned professionals who can offer them counsel and advice, and also as "go-to" people who can help them cut through red tape. Please call here if you're not sure who to call. We will connect you to the right people. For additional information call 207-581-1406 or visit the web site at www.umaine.edu/studentlife.

Residence Life

In all 18 of the undergraduate residence halls, student growth and development are promoted through the residential student curriculum. 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 encouraging 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 and transfer students are urged to use the First Year and Transfer Student services. Please visit the website at www.umaine.edu/reslife or call us at (207) 581-4801.

Title IX Student Services

Title IX Student Services, located on the third floor of the Memorial Union in Room 315 and headed by Deputy Title IX Coordinator Heather Hogan, offers prevention, awareness and educational materials and programs related to sexual harassment, sexual assault, bystander intervention, stalking, and domestic/relationship violence to students and the entire campus community. Additionally, students who have experienced, witnessed and/or want to report incidents of sexual harassment, sexual assault, stalking, and/or relationship/domestic violence should contact Title IX Student Services (207-581-1406) or UMPD (for emergency situations call 911, for non-emergency situations call 207-581-4040 and you will be connected to someone who can assist). If you would like to report anonymously you can use campus eyes located on UMPD's website. For more information, or to report any incidents of sexual harassment, assault, stalking, or relationship violence call 207-581-1406 or www.umaine.edu/titleix/.

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/. Students should contact The Office of Student Employment, Monday, Wednesday, Thursday and Friday from 8:30am - 4:30pm and on Tuesdays from 9:30 - 4:30pm at (207) 581-1349, by email at student.employ@maine.edu or visit 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 executive board representing student needs and promoting student rights. Visit us on the web site at <https://umaine.edu/umsg/>. 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.

Student Health Services

Cutler Health Center (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 Northern Light 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, and other annual wellness screenings. Cutler Health Center also provides students with an on-site laboratory, physical therapy and x-ray.

The clinical staff includes physicians, nurse practitioners, physician assistants, nurses, athletic trainer, radiographer, medical assistants, practice schedulers and an office coordinator. Cutler Health Center's practice schedulers provide assistance with access to care by scheduling appointments, coordinating services, and assisting with insurance company authorizations 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 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. Please have your health insurance information available to provide and confirm or update your mailing address and emergency contact information.

Appointment Cancellation Policy: (Notify Us in Advance). Students who make an appointment and cannot keep the allotted appointment time should call the Cutler Health Center appointment line at 207-581-4000 or send a secure message via myNorthernLightHealth Patient Portal 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.

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, and biopsy for abnormal pap evaluation call 207-581-4000.

Emergency Services: In an EMERGENCY or if you require emergent 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; 24 hours a day, 7 days a week 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 Publications and Media

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

The 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@maine.edu.

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

The Tutor Program provides small group tutoring for University of Maine students who need academic assistance in select 100 and 200 level 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, tutors use the course content to help students to develop effective metacognitive learning strategies necessary for college level learning. Tutors facilitate activities that require students to work with concepts in diverse ways. As a result, students develop a better understanding of the course material and stronger critical thinking skills.

Students in the courses tutored are sent an email to their maine.edu email which includes a Google request form. This form asks for a schedule of classes/work/meetings that could conflict with tutoring. From that schedule, we put students into groups beginning the second week of classes until the eighth week of the semester.

Interested in becoming a peer tutor? To fill out an application go to the Tutor Program website or fill out the online application in Career Link. Eligibility requirements can be found on the Tutor Program website.

University Bookstore

The University Bookstore is the official supplier of course material for the academic community at the University of Maine. The bookstore offers competitively priced course material including used books, eBooks, digital content as well as a strong rental program. The bookstore also includes a full service technology center featuring Apple and Dell computers with onsite repair. Also available is a wide range of the clothing, gift items, memorabilia and a full selection of academic supplies. For more information, please visit our website at www.bookstore.umaine.edu, email us at UMbook@maine.edu or call us at 207-581-1700.

University of Maine Police Department and Security 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. UMPD provides a 24-hr/day, 365-day per year presence on the UMaine campus. Students are strongly encouraged to become familiar with the emergency text messaging system and the Black Bear Safe app from the UMPD website. UMaine's Annual Safety and Fire Report (Clery Act) can also be found on the UMPD website (<http://www.umaine.edu/police/>). For more information about UMPD, contact their non-emergency number 207-581-4040 or visit their web site: www.umaine.edu/police/.

Veterans Education and Transition Services (VETS)/Veterans Center

Veterans Education and Transition Services part of the Division of Student Life and located on the ground floor of the Memorial Union. The center also 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, visit their website: www.umaine.edu/veterans, or visit the Center in the Memorial Union.

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

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

Raymond H. Fogler Library, Maine's largest library, is essential to education, research, and public service at the University of Maine and beyond. The library offers more than 1.5 million e-books; 180,000 online journals; 350 research databases; and over 308,000 digital music and video files, in addition to more than 2 million books and other non-digital materials. Through Fogler Library, UMaine patrons can borrow print and digital materials from libraries throughout the state and around the world.

Library staff serve as information experts who help patrons discover, use, and expand knowledge. The Reference and Information Literacy Department is the central location for research support on campus. Each academic program has a subject librarian who can provide individual consultations, classroom instruction, and subject-matter expertise across the different areas of study at UMaine. The department provides research support in-person and online via email, live chat, telephone, and video conference (<https://library.umaine.edu/ask-a-librarian/>).

Fogler Library's Special Collections Department maintains an extensive collection of published bibliographical, historical, and descriptive works on Maine, as well as literary titles by Maine authors. These documents provide extensive insights into Maine cities, towns, counties, people, and institutions. The department also houses rare books, manuscript collections, and University of Maine publications and records. Special Collections staff support the research pursuits of students, faculty, and scholars at UMaine and around the world.

Fogler Library is also a regional depository for federal government publications; an official depository for Canadian federal and Maine state government publications; the state-designated Maine Business, Science, and Technology Library; and the only Patent and Trademark Resource Center in Maine.

Merrill Library, at the University of Maine at Machias, has a collection of more than 60,000 print and physical items, as well as access to Fogler Library collections including e-resources. Librarians and staff provide services that enable learning, scholarship, and knowledge creation.

Access library resources, services, expertise, collections, and general information at <https://library.umaine.edu>. The general telephone number for the library is 207.581.1666.

Linda G. and Donald N. Zillman Art Museum - University of Maine

The Zillman Art Museum (ZAM), located at 40 Harlow Street in Downtown Bangor, opened five new galleries on the second floor in 2021, increasing the museum's total exhibition space by 42%. ZAM's twelve galleries feature changing exhibitions (new shows every four months) of primarily modern and contemporary art, as well as frequent rotations of the Permanent Collection. The Permanent Collection consists of over 4,000 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, Kara Walker, Edward Hopper, Käthe Kollwitz, Ralph Blakelock, George Inness, Mary Cassatt, Pablo Picasso, and Diego Rivera. The 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 comprises 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.

Hours: Tuesday-Saturday, 10 am-5 pm. Free Admission. 207-581-3300. <http://zam.umaine.edu>

Lord Hall Gallery

The Lord Gallery is located in the historic Lord Hall, along with the Department of Art, on the university mall. The gallery is host to six exhibitions annually. Each academic year begins with the work of an invited artist, followed by the Department of Art student senior capstone exhibition. The spring semester includes a featured faculty exhibit, and a juried student event. Each summer the gallery exhibits the work of the Intermedia Master of Fine Arts thesis students, followed by an exhibition featuring prominent Maine artists working in a variety of media.

The gallery is open Monday-Friday, 9-4. For further information: <http://umaine.edu/art/lord-hall-gallery-page/>

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 Museum features four galleries: the Merritt Gallery and the Minsky Culture Lab for temporary exhibits, a World Cultures Gallery and a Wabanaki Gallery.

The Museum offers guided tours and gallery programs, lectures, workshops and an annual Wabanaki Winter Market. It also offers staff assistance for directed research projects and internships.

For further information, please call 581-1904 or visit us on the web at www.umaine.edu/hudsonmuseum.

University of Maine Hutchinson Center

The Hutchinson Center, located in Belfast, one hour south of the University of Maine's campus, provides educational opportunities including access to courses that meet UMaine's general education requirements, full academic advising and student support services, bachelor's and graduate degrees, professional development certificate programs and workshops, a vibrant conference and institute portfolio, outreach to Waldo and Knox County public schools, and cultural community programs. In addition, the center serves as a hub for Early College programming.

Academic courses and degree programs are delivered live, online, or via videoconference technology. A state-of-the-art telecommunications and climate controlled facility, with high tech biology and chemistry labs, art studio, 125-seat auditorium, and comprehensive conference center, the Hutchinson Center serves as an educational and cultural hub for the midcoast community and is home to one of the largest Senior College programs in the state.

In meeting its mission as an outreach center of the University of Maine, the Hutchinson Center provides comprehensive conference, institute and event planning services at a local, statewide, and national level. Professional development certificate programs and community educational and cultural events are also offered, enhancing the learning experiences of Maine citizens.

The mission of the Hutchinson Center is to broaden access to the University of Maine's academic degree programs and services, lifelong learning opportunities, and professional and career development experiences using innovative approaches that increase synergy among University of Maine System entities, University of Maine departments and divisions, and that engage a wider Maine community.

For further information: umaine.edu/hutchinsoncenter, 80 Belmont Avenue, Belfast ME 04914, 207.338.8000

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 also includes an historic one-room schoolhouse, a carriage house, blacksmith shop and two heirloom gardens. The Museum is open Wednesday through Saturday, 10-3. FMI: call 581-4100 or visit us on the web: <http://umaine.edu/pagefarm/>

Collins Center for the Arts

The Collins Center for the Arts is a cultural and artistic centerpiece for eastern, central and northern Maine. The 1,435 seat Hutchins Concert Hall provides the perfect venue to see a wide variety of performances including Broadway tours, legendary musicians and singers, nationally-known comedians, classic and modern dance, live theatre, family shows, and much more. The John I. and Elizabeth E. Patches Chamber Music Series brings some of the finest instrumental and vocal chamber musicians in the world to campus. Home to one of the largest projector screens in Maine, audiences can see broadcasts from The Metropolitan Opera's award-winning *The Met: Live in HD*; and *National Theatre Live*, broadcasting the best of British theatre recorded live from the London stage. The CCA is proud to host performances by the Bangor Symphony Orchestra, one of the oldest, continually-operating community orchestras in the nation. Each year, the Symphony performs the *Nutcracker*, and other orchestral masterworks for thousands of fans. The Collins Center is also the perfect place to see arts education in action with performances presented by UMaine's School of Performing Arts ensembles. Additionally, the Collins Center hosts a number of campus and community events, including performances, lectures, rallies and public forums. For more information about the CCA's performances and events, visit www.collinscenterforthearts.com.

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 (DMC) is the University of Maine's marine laboratory. Located in Walpole, on the shore of the Damariscotta River Estuary in midcoast Maine, just 100 miles south of the Orono campus, the DMC is a full-service field station with diverse marine, freshwater, and terrestrial habitats in the immediate area. The mission of the DMC is to connect people to the ocean by generating and sharing knowledge of coastal and marine ecosystems and the human communities that are part of them. The DMC welcomes scientists and students from UMaine and around the world and is the year-around home to more than 40 faculty, staff, and students. The 182-acre campus includes over one mile of waterfront, 3 miles of trails, two flowing seawater laboratories for culturing marine organisms and conducting scientific observations and experiments, an aquaculture lease site, and analytical laboratories with a wide variety of state-of-the-art instrumentation. The DMC also has a fleet of coastal research vessels, oceanographic sampling gear, classrooms, and a marine library. It hosts UMaine's scientific diving program, one of the oldest and largest in the state. Housing, meal service and conference space are available for researchers, class field trips, and scientific and educational workshops. In addition to supporting university research and education, the DMC also actively engages with fishermen, aquaculture entrepreneurs, and other marine industry professionals and community members through collaborative research, workforce development, and business incubation programs.

The DMC is closely associated with UMaine's School of Marine Sciences (SMS), and hosts courses for the SMS as well as for allied environmental science, ecology, and engineering units, among others. During the fall semester, undergraduate students immerse themselves in field and lab-based learning through UMaine School of Marine Sciences' Semester-by-the-Sea (SBS). SBS includes field-intensive courses in topics such as oceanography, marine ecology, and scientific diving. Intensive short courses for graduate students, postdocs, faculty and professionals are offered at the DMC in the spring and summer, and independent research opportunities for graduate and undergraduate students are available year-around. More details on these opportunities are available at <https://dmc.umaine.edu/>.

Versant Power Astronomy Center

The Versant Power Astronomy Center on Rangeley Road opened in 2014 as Maine's largest and most advanced astronomy facility. It is home to the Maynard F. Jordan Planetarium, the Jordan Observatory, and the Clark Telescope. These facilities are associated with the Department of Physics and Astronomy, and were made possible by the generous contributions of private donors. Intended for the use of students, researchers, and the public, the astronomy center offers programs throughout the year.

Even on cloudy days, audiences in the planetarium can enjoy a view of the stars and journeys of adventure through our universe. Public showings are offered on Friday evenings and Sunday afternoons; additional shows are scheduled for special events. Programs can be arranged for K-12 and university classes, private groups, birthday parties, and more. Tickets for public shows are available on the website, via phone, or at the planetarium ticket counter.

The Jordan Observatory, a small, domed building behind the Versant Power 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. A separate roll-off roof building adjacent to the Jordan Observatory houses the historic Alvin Clark Telescope, an 8-inch refractor. Public observing nights are staffed by planetarium staff as well as university students. Astronomy students use the facility for studies on weeknights, and it is open on weekends for the general public. For more information visit the Versant Power Astronomy Center or to book tickets for planetarium programs see the web site: <http://astro.umaine.edu>.

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.

Maine Folklife Center (MFC)

The Maine Folklife Center was founded in 1992 (with roots going back to 1957) by world-renowned folklorist Edward D. "Sandy" Ives. The Center's mission is to enhance our understanding of the folklife, folklore, and history of Maine and Atlantic Canada and to encourage appreciation of the diverse cultures and heritage of the region, thereby strengthening and enriching our communities. Among other activities, the Center documents, preserves, analyzes, and disseminates information about the region's history and traditional cultures, primarily through recorded interviews. The Center also offers training in oral history and cultural heritage documentation, and produces a journal, podcasts, and other materials focused on the region's cultures and people. The Center, which also houses a library, media production facility, and seminar room, is in South Stevens Hall on the Orono campus. Our phone number is 207-581-1840. More information can be found on our website: 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 represent diverse disciplines and engage in a broad range of initiatives that enhance the quality of life for individuals with developmental and other disabilities. 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, autism, child care, health, employment, housing, transition, mobility, 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 Disabilities 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 207.581.1084 or 800.203.6957, TTY users: call Maine Relay 711, or visit the CCIDS website: www.ccids.umaine.edu.

College of Earth, Life, and Health Sciences

The College of Earth, Life, and Health Sciences at the University of Maine is a hub for discovery, education and collaboration in the social, health, life and environmental sciences. Our students develop real-world perspectives with hands-on opportunities in Maine's forests, farms, fisheries, hospitals, schools, communities and businesses.

ACADEMIC PROGRAMS:

Bachelor of Arts in:

Biology
Botany
Communication Sciences and Disorders
Earth and Climate Sciences
Economics
Financial Economics
Zoology

Bachelor of Science in:

Animal and Veterinary Sciences
Biochemistry
Biology
Botany
Earth and Climate Sciences
Ecology and Environmental Sciences
Economics
Environmental Horticulture
Financial Economics
Food Science and Human Nutrition
Forestry
Marine Science
Microbiology
Molecular and Biomedical Sciences
Nursing
Parks, Recreation, and Tourism
Social Work
Sustainable Agriculture

Sustainable Food Systems

Sustainable Materials and Technology
Wildlife Ecology
Zoology

Minors:

Animal and Veterinary Sciences
Aquaculture
Biochemistry
Biology
Botany
Climate Sciences
Communication Sciences and Disorders
Earth Sciences
Ecology and Environmental Sciences
Economics

Environmental Horticulture
Equine Studies
Fisheries
Food Science
Forest Ecosystem Science
Forest Products
Forest Recreation Management
Human Nutrition
Microbiology
Molecular and Cellular Biology
Neuroscience
Pre-Medical Studies
Renewable Energy Economics and Policy
Renewable Energy Sciences and Technology
Resource and Agribusiness Management
Soil Science
Sustainability
Sustainable Agriculture
Sustainable Food Systems
Zoology

College of Earth, Life and Health Sciences Graduation Requirements:

The college offers both Bachelor of Science and Bachelor of Arts degrees. Each program (or major) has a unique curriculum that includes general education requirements of the university. To obtain a Bachelor of Arts degree:

1a. Students must complete an academic minor or a second academic major outside of their primary discipline. Appropriate minors and majors shall be determined by the academic unit of the student's primary major to ensure breadth of study.

or

1b. Alternatively, a student may 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.

and

2. Students must complete a minimum of 60 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 60 credits.) Degrees will require 120 or 121 total credits for graduation. In addition, each student must achieve a minimum grade point average GPA of 2.0. Some programs may also require minimum grade point averages for courses within the major.

College of Earth, Life and Health Sciences Notes:

The college has a well-developed, student-oriented academic advising system. Each student has an advisor who assists in program planning and career development. Throughout the undergraduate years, the student's capabilities, aspirations, and goals are the primary concerns governing the advising process. Within 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 that prepares them for the challenges of tomorrow.

Students typically select a degree program upon joining the college. In addition to the major, students have the option of selecting one of more than 80 minors offered by the university. Choosing a minor enables students to strengthen their preparation in the major by selecting supporting courses from a related discipline.

The college also provides support through the Academic Support Center. This one-stop resource is designed to help students thrive during their time at UMaine. Students receive personalized support and are connected to campus services and resources, while the knowledgeable staff can help students navigate obstacles, set goals, and meet regularly to keep them on track.

Admission Requirements:

Entrance requirements for the college include the following high school units: four years of English, three years of mathematics with completion up to at least Algebra 2 is required (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.

The deadline for readmission applications is August 15 for the fall semester and January 4 for the spring semester. Exceptions to this deadline may be requested if extenuating circumstances are present. For additional information, please see the "Admission" section in the Undergraduate Catalog.

Program Contacts**Animal and Veterinary Sciences**

Timothy Bowden

237 Hitchner Hall

581-2772

timothy.bowden@maine.edu

Biochemistry

Ed Bernard

284 Hitchner Hall

581-2804

edward.bernard@maine.edu

Biology

Ann Dieffenbacher-Krall

100 Murray Hall

581-2510

annd@maine.edu

Botany

Ann Dieffenbacher-Krall

100 Murray Hall

581-2510

annd@maine.edu

Communication Science and Disorders

Jane Puhlman

308 Dunn Hall

581-2006

jane.puhlman@maine.edu

Earth and Climate Sciences

Alice Doughty
121 Bryand Global Sciences Center
581-2159
alice.doughty@maine.edu

Ecology and Environmental Sciences

Kate Ruskin
123 Bryand Global Science Center

581-3177

katharine.ruskin@maine.edu

Economics

George Criner

207 Winslow Hall

581-3150
criner@maine.edu

Environmental Horticulture

Charlene Gray

117 Deering Hall

581-2948

charlene.gray@maine.edu

Financial Economics

George Criner
207 Winslow Hall
581-3150
criner@maine.edu

Food Science and Human Nutrition

Eileen Molloy
111 Hitchner Hall
581-3121
eileen.molloy@maine.edu

Forestry

William H. Livingston
201B Nutting Hall
581-2990
williaml@maine.edu

Marine Science

William Ellis
360 Aubert Hall
581-4360
william.ellis@maine.edu

Medical Laboratory Sciences

Ed Bernard
284 Hitchner Hall
581-2804
edward.bernard@maine.edu

Microbiology

Ed Bernard
284 Hitchner Hall
581-2804
edward.bernard@maine.edu

Molecular and Cellular Biology

Ed Bernard
284 Hitchner Hall
581-2804
edward.bernard@maine.edu

Nursing

Susan Tardiff
Dunn Hall
581-2594
susan.tardiff@maine.edu

Parks, Recreation, and Tourism

William H. Livingston
201B Nutting Hall
581-2990
williaml@maine.edu

Social Work

Kelly Jaksa
107 Social Work Bldg
581-2405
kelly.jaksa@maine.edu

Sustainable Agriculture
Charlene Gray
117 Deering Hall
581-2948
charlene.gray@maine.edu

Sustainable Materials and Technology

William H. Livingston
201B Nutting Hall
581-2990
williaml@maine.edu

Undeclared
Julie Eubanks
115 Deering Hall
581-3310
julie.eubanks@maine.edu

Wildlife Ecology

Lindsay Seward
238 Nutting Hall
581-2847
lseward@maine.edu

Zoology
Ann Dieffenbacher-Krall
100 Murray Hall
581-2510
annd@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: C- or higher is required for all AVS courses.

Other GPA requirements to graduate: None.

Required Course(s) for fulfilling Capstone Experience: AVS 401 and AVS 402

Contact Information: Jessica Majors, AVS Program Coordinator, 201B Rogers Hall, (207)581-2938, jessica.majors@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 degree in Animal and Veterinary Sciences 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. 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.

Equine Science Concentration

This degree includes an undergraduate concentration in Equine Science, which is recommended for careers in a variety of equine-related disciplines, including equine nutrition, equine policy, breeding/boarded farm management, training horses for performance/racing events, and in preparation for graduate studies in Equine Science.

Pre-Veterinary Science Concentration

This degree includes an undergraduate concentration in Pre-Veterinary Science, which is recommended for superior students who seek admission to veterinary college. Obtaining admission to U.S. Colleges of Veterinary Medicine is a competitive process, and minimum GPA's of 3.2 overall and 3.5 in science and math courses are generally needed to be considered for admission to most DVM programs. Completing coursework at the University of Maine does not guarantee acceptance in any Doctor of Veterinary Medicine degree program. 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. To declare the Pre-Veterinary Science concentration, the student is required to have earned grades of C- or better in BIO 100 and CHY 121, courses which are prerequisites for many of the upper level courses required by colleges of veterinary medicine.

Hands-on Experience

An important aspect of the degree in Animal and Veterinary Sciences (AVS) 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 Standardbred 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 (38 credits)

Student-selected AVS Courses (13 credits)

Science and Mathematics Courses (28 credits)

Economic Course (6 credits)

English/Communication Courses (9 credits)

Human Values and Social Context Courses (9 credits)

Ethics Course (3 credits)

NFA 117 -First Year Success Seminar (1 credit)

BS in Animal and Veterinary Sciences with Equine Science concentration (120 credits)

Required Animal and Veterinary Science Courses (55 credits)

Student-selected AVS Courses (6 credits)

Science and Mathematics Courses (28 credits)

Business Course (3 credits)

Economic Course (6 credits)

English/Communication Courses (9 credits)

Human Values and Social Context Courses (9 credits)

Ethics Course (3 credits)

NFA 117 - First Year Success Seminar (1 credit)

BS in Animal and Veterinary Sciences with Pre-Veterinary Science concentration (120 credits)

Required Animal and Veterinary Science Courses (33 credits)

Student-selected AVS (3 credits)

Science and Mathematics Courses, including Vet School requirements (56 credits)

Economic Course (3 credits)

English/Communication Courses (9 credits)

Human Values and Social Context Courses (9 credits)

Ethics Course (3 credits)

NFA 117 - First Year Success Seminar (1 credit)

General Elective Courses (3 credits)

Required Courses in Suggested Sequence for the B.S. in Animal and Veterinary Sciences

First Year - First Semester

- AVS 145 - Introduction to Animal Science **Credits: 3**
- AVS 146 - Introduction to Animal Science Laboratory **Credits: 1**
- BIO 100 - Basic Biology **Credits: 4**
- ENG 101 - College Composition **Credits: 3**
- MAT 116 - Introduction to Calculus **Credits: 3**
- NFA 117 - First-Year Success Seminar **Credits: 1**

First Year - Second Semester

- BIO 200 - Biology of Organisms **Credits: 4**
- CMJ 103 - Public Speaking **Credits: 3**
- STS 132 - Principles of Statistical Inference **Credits: 3**
- General Education: Cultural Diversity and International Perspectives **Credits: 3**
- Animal Science Elective **Credits: 3**

Second Year - First Semester

- AVS 211 - Introduction to Aquaculture **Credits: 3**
- AVS 254 - Introduction to Animal Microbiomes **Credits: 3**
- AVS 303 - Equine Management Cooperative **Credits: 2**
or
- AVS 347 - Dairy Cattle Technology Laboratory **Credits: 2**
- AVS 346 - Dairy Cattle Technology **Credits: 3**
- BMB 207 - Fundamentals of Chemistry **Credits: 3**
- BMB 209 - Fundamentals of Chemistry Laboratory **Credits: 1**
or
- CHY 121 - General Chemistry I **Credits: 3**
- CHY 123 - General Chemistry Laboratory I **Credits: 1**

Second Year - Second Semester

- AVS 249 - Laboratory and Companion Animal Science **Credits: 3**
- AVS 303 - Equine Management Cooperative **Credits: 2**
or
- AVS 347 - Dairy Cattle Technology Laboratory **Credits: 2**
- BMB 208 - Elementary Physiological Chemistry **Credits: 3**
- BMB 210 - Elementary Physiological Chemistry Laboratory **Credits: 1**
or
- CHY 122 - General Chemistry II **Credits: 3**

- CHY 124 - General Chemistry Laboratory II **Credits: 1**
- ECO 154 - Small Business Economics and Management **Credits: 3**
- General Education: Western Cultural Tradition Credits: 3

Third Year - First Semester

- AVS 455 - Animal Nutrition **Credits: 3**
- BIO 377 - Medical Physiology **Credits: 3**
- ENG 315 - Research Writing in the Disciplines **Credits: 3**
or
- ENG 317 - Business and Technical Writing **Credits: 3**
- Animal Science Elective Credits: 3
- General Elective Credits: 4

Third Year - Second Semester

- AVS 401 - Capstone in Animal Science I **Credits: 2**
- AVS 437 - Animal Diseases **Credits: 3**
- Animal Science Elective Credits: 3
- General Elective Credits: 6

Fourth Year - First Semester

- AVS 480 - Physiology of Reproduction **Credits: 3**
- BIO 350 - Concepts and Applications of Genetics **Credits: 3**
- Career- Related Experience Credits: 4
- General Education: Ethics Credits: 3
- General Elective Credits: 3

Fourth Year - Second Semester

- AVS 402 - Capstone in Animal Science II **Credits: 2**
- AVS 446 - Forage Science and Range Management **Credits: 3**
- AVS 466 - Livestock Feeds and Feeding **Credits: 2**
- General Education: Artistic and Creative Expression Credits: 3
- General Elective Credits: 3

Note

¹Animal Science students are encouraged to declare a Minor to fulfill the 19 credits of General Electives.

Animal Science Electives

Choose at least 9 credits in this section:

- AVS 196 - Introduction to Equine Cooperative **Credits: 0-1**

- AVS 203 - Equine Management **Credits: 3**
- AVS 267 - Swine Production **Credits: 1**
- AVS 268 - Pasture Poultry Production **Credits: 1**
- 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 411 - Advanced Aquaculture **Credits: 3**
- AVS 433 - Equine Exercise Physiology **Credits: 3**
- AVS 454 - DNA Sequencing Analysis Lab **Credits: 2**
- AVS 477 - Zoonoses and Animal Health **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**

Required Courses in Suggested Sequence for the B.S. in Animal and Veterinary Sciences (Equine Science Concentration)

First Year - First Semester

- AVS 145 - Introduction to Animal Science **Credits: 3**
- AVS 146 - Introduction to Animal Science Laboratory **Credits: 1**
- BIO 100 - Basic Biology **Credits: 4**
- ENG 101 - College Composition **Credits: 3**
- MAT 116 - Introduction to Calculus **Credits: 3**
- NFA 117 - First-Year Success Seminar **Credits: 1**

First Year - Second Semester

- AVS 196 - Introduction to Equine Cooperative **Credits: 0-1**
- BIO 200 - Biology of Organisms **Credits: 4**
- CMJ 103 - Public Speaking **Credits: 3**
- ECO 120 - Principles of Microeconomics **Credits: 3**
- STS 132 - Principles of Statistical Inference **Credits: 3**

Second Year -First Semester

- AVS 254 - Introduction to Animal Microbiomes **Credits: 3**
- AVS 303 - Equine Management Cooperative **Credits: 2**
or
- AVS 347 - Dairy Cattle Technology Laboratory **Credits: 2**
- AVS 346 - Dairy Cattle Technology **Credits: 3**

- AVS 393 - Training the Standardbred Horse **Credits: 3**
- BMB 207 - Fundamentals of Chemistry **Credits: 3**
- BMB 209 - Fundamentals of Chemistry Laboratory **Credits: 1**
or
- CHY 121 - General Chemistry I **Credits: 3**
- CHY 123 - General Chemistry Laboratory I **Credits: 1**

Second Year -Second Semester

- AVS 203 - Equine Management **Credits: 3**
- AVS 249 - Laboratory and Companion Animal Science **Credits: 3**
- AVS 303 - Equine Management Cooperative **Credits: 2**
or
- AVS 347 - Dairy Cattle Technology Laboratory **Credits: 2**
- BMB 208 - Elementary Physiological Chemistry **Credits: 3**
- BMB 210 - Elementary Physiological Chemistry Laboratory **Credits: 1**
or
- CHY 122 - General Chemistry II **Credits: 3**
- CHY 124 - General Chemistry Laboratory II **Credits: 1**
- ECO 154 - Small Business Economics and Management **Credits: 3**

Third Year - First Semester

- AVS 405 - Livestock and Companion Animal Behavior **Credits: 3**
- AVS 455 - Animal Nutrition **Credits: 3**
- BIO 377 - Medical Physiology **Credits: 3**
- Business course Credits: 3
- Animal Science Elective Credits: 3

Third Year - Second Semester

- AVS 353 - Equine Reproduction and Breeding Management **Credits: 3**
- AVS 401 - Capstone in Animal Science I **Credits: 2**
- AVS 437 - Animal Diseases **Credits: 3**
- ENG 315 - Research Writing in the Disciplines **Credits: 3**
or
- ENG 317 - Business and Technical Writing **Credits: 3**
- General Education: Cultural Diversity and International Perspectives Credits: 3

Fourth Year - First Semester

- AVS 397 - Equine Internship **Credits: 1-4**
- AVS 480 - Physiology of Reproduction **Credits: 3**
- BIO 350 - Concepts and Applications of Genetics **Credits: 3**

- General Education: Western Cultural Tradition Credits: 3
- General Education: Ethics Credits: 3

Fourth Year - Second Semester

- AVS 402 - Capstone in Animal Science II **Credits: 2**
- AVS 433 - Equine Exercise Physiology **Credits: 3**
- AVS 446 - Forage Science and Range Management **Credits: 3**
- AVS 466 - Livestock Feeds and Feeding **Credits: 2**
- General Education: Artistic and Creative Expression Credits: 3
- Animal Science Elective Credits: 3

Animal Science Electives

Choose at least 6 credits in this section:

- AVS 267 - Swine Production **Credits: 1**
- AVS 268 - Pasture Poultry Production **Credits: 1**
- AVS 454 - DNA Sequencing Analysis Lab **Credits: 2**
- AVS 477 - Zoonoses and Animal Health **Credits: 3**

Business Course

Choose one of the following courses:

- ACC 201 - Principles of Financial Accounting **Credits: 3**
- BIS 235 - Digital Business Transformation **Credits: 3**
- MGT 101 - Introduction to Business **Credits: 3**
- MGT 342 - Small Business Management **Credits: 3**

Required Courses in Suggested Sequence for the B.S. in Animal and Veterinary Sciences (Pre-Veterinary Science Concentration)

First Year - First Semester

- AVS 145 - Introduction to Animal Science **Credits: 3**
- AVS 146 - Introduction to Animal Science Laboratory **Credits: 1**
- BIO 100 - Basic Biology **Credits: 4**
- CHY 121 - General Chemistry I **Credits: 3**
- CHY 123 - General Chemistry Laboratory I **Credits: 1**
- MAT 116 - Introduction to Calculus **Credits: 3**
- or
- MAT 126 - Calculus I **Credits: 4**
- NFA 117 - First-Year Success Seminar **Credits: 1**

First Year - Second Semester

- BIO 200 - Biology of Organisms **Credits: 4**
- CHY 122 - General Chemistry II **Credits: 3**
- CHY 124 - General Chemistry Laboratory II **Credits: 1**
- ENG 101 - College Composition **Credits: 3**
- STS 132 - Principles of Statistical Inference **Credits: 3**

Second Year - First Semester

- AVS 254 - Introduction to Animal Microbiomes **Credits: 3**
- AVS 303 - Equine Management Cooperative **Credits: 2**
or
- AVS 347 - Dairy Cattle Technology Laboratory **Credits: 2**
- AVS 346 - Dairy Cattle Technology **Credits: 3**
- BIO 377 - Medical Physiology **Credits: 3**
- PHY 111 - General Physics I **Credits: 4**

Second Year - Second Semester

- AVS 249 - Laboratory and Companion Animal Science **Credits: 3**
- AVS 303 - Equine Management Cooperative **Credits: 2**
or
- AVS 347 - Dairy Cattle Technology Laboratory **Credits: 2**
- CMJ 103 - Public Speaking **Credits: 3**
- ECO 154 - Small Business Economics and Management **Credits: 3**
- PHY 112 - General Physics II **Credits: 4**

Third Year - First Semester

- AVS 455 - Animal Nutrition **Credits: 3**
- 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 401 - Capstone in Animal Science I **Credits: 2**
- 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 480 - Physiology of Reproduction **Credits: 3**
- BIO 350 - Concepts and Applications of Genetics **Credits: 3**
- General Education: Western Cultural Tradition Credits: 3
- General Education: Ethics Credits: 3
- Animal Science Elective Credits: 3

Fourth Year - Second Semester

- AVS 402 - Capstone in Animal Science II **Credits: 2**
- AVS 466 - Livestock Feeds and Feeding **Credits: 2**
- General Education: Artistic and Creative Expression Credits: 3
- General Education: Cultural Diversity and International Perspectives Credits: 3
- General Electives Credits: 4

Animal Science Electives

Choose at least 3 credits in this section:

- AVS 196 - Introduction to Equine Cooperative **Credits: 0-1**
- AVS 203 - Equine Management **Credits: 3**
- AVS 267 - Swine Production **Credits: 1**
- AVS 268 - Pasture Poultry Production **Credits: 1**
- 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**
- AVS 446 - Forage Science and Range Management **Credits: 3**
- AVS 454 - DNA Sequencing Analysis Lab **Credits: 2**
- AVS 477 - Zoonoses and Animal Health **Credits: 3**

Notes

¹Most of our recent graduates who were accepted to colleges of veterinary medicine had accumulated at least 300 hours of experience under the supervision of a veterinarian.

²Several American Veterinary Medical Association-accredited veterinary colleges require BIO 335 - Human Anatomy, 4 credits and/or BIO 480 - Cell Biology, 3 credits. Check the specific requirements of the veterinary colleges that are on your preferred list.

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: A C or higher is required in BMB 280.

Other GPA requirements to graduate: A minimum cumulative GPA of 2.0 for all required BMB courses and science electives.

Required Course(s) for fulfilling Capstone Experience: BMB 491

Contact Information: Melody Neely, Chair, Hitchner Hall Room 360, (207) 581-1513, melody.neely@maine.edu
or Ed Bernard, Undergraduate Coordinator, Hitchner Hall, Room 284, (207) 581-2804, edward.bernard@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

- BMB 150 - Phage Genome Discovery I **Credits: 4**
- CHY 121 - General Chemistry I **Credits: 3**
- CHY 123 - General Chemistry Laboratory I **Credits: 1**
- ENG 101 - College Composition **Credits: 3**
- MAT 126 - Calculus I **Credits: 4**

First Year - Second Semester

- BMB 155 - Genome Discovery II: From DNA to Genes **Credits: 3**
- BMB 280 - Introduction to Molecular and Cellular Biology **Credits: 3**
- CHY 122 - General Chemistry II **Credits: 3**
- CHY 124 - General Chemistry Laboratory II **Credits: 1**
- MAT 127 - Calculus II **Credits: 4**

Second Year - First Semester

- CHY 251 - Organic Chemistry I **Credits: 3**
- CHY 253 - Organic Chemistry Laboratory I **Credits: 2**

- Human Values Social Context/Ethics Elective Credits: 3
- Human Values Social Context/Ethics Elective Credits: 3
- Free Elective Credits: 4

Second Year - Second Semester

- BMB 360 - Biochemistry for Molecular and Biomedical Sciences **Credits: 3**
- CHY 252 - Organic Chemistry II **Credits: 3**
- CHY 254 - Organic Chemistry Laboratory II **Credits: 2**
- Science Elective Credits: 3
- Science Elective Credits: 3

Third Year - First Semester

- BMB 400 - Molecular Genetics **Credits: 3**
- BMB 460 - Advanced Biochemistry **Credits: 3**
- PHY 111 - General Physics I **Credits: 4**
or
- PHY 121 - Physics for Engineers and Physical Scientists I **Credits: 4**
- Human Values Social Context/ Ethics Elective Credits: 3

Third Year - Second Semester

- BMB 464 - Analytical and Preparative Biochemical Laboratory Methods **Credits: 4**
- PHY 112 - General Physics II **Credits: 4**
or
- PHY 122 - Physics for Engineers and Physical Scientists II **Credits: 4**
- BMB 400-Level Elective Credits: 3
- Human Values Social Context/Ethics Elective Credits: 3

Fourth Year - First Semester

- BMB 467 - Physical Biochemistry **Credits: 3**
- BMB 480 - Seminar in Molecular and Biomedical Sciences **Credits: 1**
- BMB 491 - Biochemistry, Microbiology and Molecular Biology Research **Credits: Ar**
- Science Elective Credits: 3
- Human Values Social Context/Ethics Elective: Credits: 3
- Free Elective Credits: 3

Fourth Year - Second Semester

- BMB 480 - Seminar in Molecular and Biomedical Sciences **Credits: 1**
- BMB 491 - Biochemistry, Microbiology and Molecular Biology Research **Credits: Ar**
- Human Values Social Context/Ethics Elective Credits: 3
- Free Elective Credits: 3
- Free Elective Credits: 3

- Free Elective Credits: 3

Science and Program Electives

- BIO 208 - Anatomy and Physiology **Credits: 4**
 - BIO 307 - Interdisciplinary Neuroscience **Credits: 3**
 - BIO 350 - Concepts and Applications of Genetics **Credits: 3**
 - BIO 365 - Fundamentals of Evolution **Credits: 3**
 - BIO 377 - Medical Physiology **Credits: 3**
 - BIO 474 - Neurobiology **Credits: 3**
 - BIO 480 - Cell Biology **Credits: 3**
 - BMB 402 - Introduction to Bioinformatics **Credits: 3**
 - BMB 409 - Applied Microbiology **Credits: 3**
 - BMB 415 - Microbiology of Historical Plagues **Credits: 1**
 - BMB 420 - Infectious Disease **Credits: 3**
 - BMB 421 - Infectious Disease Laboratory **Credits: 2**
 - BMB 440 - Introductory Immunology **Credits: 3**
 - BMB 455 - Virology **Credits: 3**
 - BMB 490 - Molecular Genetics Lab **Credits: 3**
 - BMB 491 - Biochemistry, Microbiology and Molecular Biology Research **Credits: Ar ***
 - BMB 497 - Independent Study **Credits: Ar ***
 - CHY 431 - Structure and Mechanism in Biological Chemistry **Credits: 3**
 - COS 220 - Introduction to C++ Programming **Credits: 3**
 - MAT 228 - Calculus III **Credits: 4**
- * Only 3 credits of *either* BMB 491 or BMB 497 may count toward the Science and Program Elective Requirement

BMB 400-Level Electives

Students must complete 6 credits of BMB 400-Level Electives. Any taken beyond that may count toward Science & Program Electives.

- BMB 402 - Introduction to Bioinformatics **Credits: 3**
- BMB 490 - Molecular Genetics Lab **Credits: 3**
- BMB 497 - Independent Study **Credits: Ar**

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: A C or higher is required in BIO 100 and BIO 200.

Other GPA requirements to graduate: A minimum cumulative GPA of 2.0 in all courses in Biological Sciences Areas, and chemistry, organic chemistry, physics, calculus, and statistics combined.

Required Course(s) for fulfilling Capstone Experience: BIO 388 or BIO 392 or BIO 402 or BIO 431 or BIO 438 or BIO 450 or BIO 463 or HON 498 & 499* or BIO 480 and BIO 483. For specific requirements, see the curricula for individual concentrations.

*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, Undergraduate Program Coordinator, 100 Murray Hall, (207)581-2540, annd@maine.edu

A major in biology allows students to explore various aspects of our natural world. Tremendous advances in biotechnology, medicine, environmental studies, and related areas make biology an important and fascinating field of study. Biology seeks to understand living organisms - from animals and plants to fungi and microbes. Biologists help find cures for diseases, become doctors, save endangered species, and more. A diverse set of courses allows students to learn evolutionary principles, biodiversity, and how organisms interact with each other and their physical environment. Biology majors are exposed to a variety of research opportunities. Research in the field of biology increases knowledge about living organisms in order to tackle problems we face in fields such as medicine, agriculture, and ecology.

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.

The Biology major 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, evolution, physiology, anatomy, biodiversity, ecology, and behavior. Students enrolled in the Honors College will find the program complementary to their degree studies. Each student works with an academic advisor 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 advanced degrees, are strongly encouraged to include independent research under the guidance of a faculty member in their program. Students wishing to spend a semester studying abroad are advised to discuss this option with their advisor early in their program.

The B.S. and B.A. degrees in Biology are 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, visit <https://sbe.umaine.edu>.

Students choosing Biology as a second major are not required to complete a Biology capstone provided the student completes a capstone for their first major. Biology is not allowable as a second major for students whose first major is Animal & Veterinary Science with Pre-Veterinary concentration because of substantial overlap between requirements.

Students majoring in Biology are not eligible for a second major in Botany or Zoology because of extensive overlap in the requirements for these degrees.

Students majoring in Biology must earn a score of 4 or 5 in order to receive advanced placement credit for BIO 100 and BIO 200.

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, have a cumulative GPA of 2.0 or better, and a grade of C or better in MAT 111 or no grade record in MAT 111 and a score of 30 or higher on the Math Placement Exam.

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, physics, and social sciences required. The B.S. requires more in-depth study of chemistry, math, and physics while the B.A. requires a minor or more in-depth study of social sciences and humanities. The B.S. provides preparation for the health professions, while the B.A. ensures a broad liberal arts education and allows more flexibility for minors and double majors, allowing students to build career-enhancing skills.

Expertise in Biology is essential to ensure that sound science is the foundation for public policy, laws, regulations, business decisions, natural resource management, and communication about scientific ideas and issues. Educators, artists, writers, lawyers, economists, public policy makers and politicians, and business people in green industries, pharmaceuticals, biotechnology, and agribusiness greatly benefit from a strong background in science. Pairing a BA with a second major or minor builds strength for careers in education, communication, policy, law, or business. In addition, the critical thinking, reading, and writing skills gained through humanities and social sciences courses can significantly contribute to a career in science.

BA students are required to declare a minor or 2nd major in an approved subject outside of botany, biology, or zoology or complete additional General Education requirements as noted below. BA students are encouraged to explore career options through the University of Maine Career Center and with their academic advisor to select a minor or 2nd major that adds breadth to the academic program by developing skills and knowledge outside of the primary major.

Concentrations in the B.S. and B.A. Degrees in Biology

The Ecology Concentration is open to students in either the B.S. or B.A. degree program. This concentration is intended for students interested in exposure to ecological principles within the context of a rigorous biological sciences curriculum.

The Entomology Concentration is open to students in either the B.S. or the B.A. degree program. The concentration is intended to provide students with a broad understanding of the form and function of insects, their interactions with people and society, the study of insect conservation, and management in natural and human-derived systems.

The Pre-medical Studies Concentration is open to students in the B.S. degree program only, not the B.A. 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.

Biology Club

Students majoring in Biology, Botany, and Zoology 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.

Accelerated and Special Programs

The University of Maine, 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 NECO or LCC. Contact the Career Center's Health Professions Career Counselor (207) 581-2587 for complete program details and a curriculum for the first three years.

Tufts University School of Medicine additionally offers a "Maine Track" MD program, in partnership with Maine Medical Center (MMC) in Portland Maine, for applicants who are interested in a unique, innovative curriculum that will offer clinical training experiences in Maine and expose medical students to the unique aspects of rural practice as well as training in a major tertiary medical center. Tufts requires "Maine Track" students to have taken the SAT or ACT prior to entering University of Maine.

Honors College

Students enrolled in the Honors College will find that the program works well with their major, replacing General Education and capstone requirements. Honors students should work with their advisor to adapt the suggested course sequences below to accommodate their Honors courses.

Bachelor of Science Core Requirements

1. **Basic Biology:**BIO 100 and BIO 200 (Minimum grade of C required in each.)
2. **General Chemistry:** CHY 121, CHY 122, CHY 123, and CHY 124
3. **Organic Chemistry I:** CHY 251 and CHY 253; or BMB 221 and BMB 222
4. **Organic Chemistry II or Biochemistry:** CHY 252 and CHY 254; or BMB 322 and BMB 323
5. **Physics I:** PHY 111 or PHY 121
6. **Physics II:** PHY 112 or PHY 122
7. **Calculus:** MAT 116 or MAT 126 or MAT 136
8. **Statistics:** STS 132 or WLE 220 or PSY 241
9. **Biological Sciences Area Credits (see below):** minimum of 27 credits including courses from the areas as noted for each area. At least four lab courses (L) must be taken among the BIO Area courses, and at least one animal course (A) at least one plant course (P), and at least 3 credits of capstone(C). A minimum of 12 of these credits must be taken at University of Maine. Students for whom this is a second major are not required to take a BIO capstone and need only take 24 credits within the Biological Sciences Areas.
10. **Required Course:** NFA 117
11. **Minimum average GPA 2.0 is required for all courses listed in items 1-9 above.**

Bachelor of Arts Core Requirements

1. **Basic Biology:**BIO 100 and BIO 200 (Minimum grade of C required in each.)
2. **General Chemistry:** CHY 121 and CHY 123, or BMB 207 and BMB 209
3. **Earth, Chemical, and Physical Systems**

Choose 2 of the following courses, 6-8 cr.

- BMB 208 - Elementary Physiological Chemistry and BMB 210 - Elementary Physiological Chemistry Laboratory
- BMB 221 - Organic Chemistry and BMB 222 - Laboratory in Organic Chemistry

- BMB 322 - Biochemistry and BMB 323 - Biochemistry Laboratory
- BMB 402 - Introduction to Bioinformatics
- CHY 122 - General Chemistry II and CHY 124 - General Chemistry Laboratory II
- CHY 251 - Organic Chemistry I and CHY 253 - Organic Chemistry Laboratory I
- Any ERS course
- Any PHY course 105 or higher

4. Mathematics:

- STS 132 or WLE 220 or PSY 241, Statistics, 3 or 4 credits
- One additional quantitative literacy course is necessary to complete Gen Ed requirement, 3 or 4 credits
 - Recommended courses:
 - MAT 116 - Introduction to Calculus
 - MAT 122 - Pre-Calculus
 - MAT 126 - Calculus I
 - COS 121 - Coding for Everyone
 - PHI 250 - Formal Logic
 - Or any other course listed as filling Quant. Lit. Gen Ed.

5. **Biological Sciences Area Credits (see below):** minimum of 27 credits including courses from the areas as noted for each area. At least four lab courses (L) must be taken among the BIO Area courses, and at least one animal course (A) at least one plant course (P), and at least 3 credits of capstone (C). A minimum of 12 of these credits must be taken at University of Maine. Students for whom this is a second major are not required to take a BIO capstone and need only take 24 credits within the Biological Sciences Areas.

6. **Required Course:** NFA 117

7. **Minimum average GPA 2.0 is required for all courses listed in items 1-6 above.**

8. **Satisfy General Education requirements.**

9. Complete the College of Earth, Life and Health Sciences Graduation Requirements to obtain a Bachelor of Arts Degree which can be found here: **ELHS BA Graduation Requirements**

Ecology Concentration Requirements

1. Satisfy the core requirements of either the B.S. or B.A. degree program.
2. **Statistics requirement:** Take the following course to satisfy the requirement: WLE 220 Note for B.A. students, WLE 220 requires either MAT 116, MAT 122, or MAT 126 as a prerequisite.
3. **For BIO Area V:** Take the following courses: BIO 319 or SMS 300 and at least 3 additional credits chosen from BIO 205, BIO 309, BIO 354, BIO 411, BIO 429, BIO 431, BIO 434, BIO 455, BIO 463, BIO 468, BIO 476, EES 475, PSE 457, PSE 469, SFR 457, or WLE 200.
4. **Environmental Influences:** At least one of the following courses: EES 140, ERS 101, ERS 102, ERS 103, ERS 107, ERS 108, ERS 121, ERS 152, SFR 406, or SMS 108
5. **Field Experience:** At least one of the following courses: BIO 205, BIO 309, BIO 430, BIO 437, BIO 463, or EES 475. This course can also count toward BIO area credits for the major.
6. **General Education requirement:** To fill the general education capstone requirement (3 Biological Sciences credits labeled (C)), students in the Ecology Concentration must take one of the following: BIO 388, BIO 392, BIO 431, BIO 463 or HON 499
7. **Writing Intensive:** ENG 201, ENG 315 or ENG 317. The requirement is satisfied for students who complete the Honors Civilization Sequence (HON 111, HON 112, HON 211, HON 212)

Entomology Concentration Requirements

1. Satisfy the core requirements of either the B.S or the B.A. degree program
2. Biological Sciences AREAS 1-5: Students may take any courses they want in any areas in accordance with degree requirements. However, to fill the requirements of the Entomology Concentration, course choices must include the following:
 - **For BIO area 4:** Take BIO 326
 - **For BIO area 5:** Take two of the following courses:
BIO 205, BIO 319, BIO 354, BIO 411, BIO 429, BIO 431, BIO 455, BIO 463, EES 140, PSE 457
 - **Insects specific courses:** Among the Biological Sciences Area courses, include at least **three** of the following courses, which can overlap with requirements listed above:
BIO 326, BIO 411, BIO 429, BIO 430
 - **Plant course:** Include at least **one** plant focused course (labeled "P"), which can overlap with requirements listed above, from this list:
BIO 310, BIO 429, BIO 432, BIO 452, BIO 464, PSE 457, SFR 439
3. **General Education requirements:** Students are strongly encouraged to complete their capstone requirement (3 Biological Sciences credits labeled (C)) through independent research, BIO 388 or HON 499

Pre-medical Studies Concentration Requirements

1. Satisfy the core requirements for the B.S.
2. Fill the B.S. Organic Chemistry requirements with: CHY 251, CHY 252, CHY 253, and CHY 254
3. At least one of the BIO area I choices must come from this list: BIO 336, BIO 480, or BMB 300
4. At least one of the BIO area III course choices must come from this list: BIO 377 or BMB 440
5. From BIO area IV, students must take either: BIO 329 and BIO 331; or BIO 335
6. To fill the general education capstone requirements (3 Biological Sciences credits labeled (C)), students in the Pre-medical Studies Concentration must take one of the following list:
BIO 388 (highly recommended), BIO 431, BIO 438, BIO 450, HON 499 (topic in Biology with an SBE faculty advisor), or both BIO 480 and BIO 483.
7. **Biochemistry:** BMB 322 and BMB 323

If, and only if, CHY251, CHY 252, CHY 253, and CHY 254 are also taken, BMB 323 may count as one of the four required BIO area labs.
8. **Writing Intensive (take one of the following):** ENG 201, ENG 315, or ENG 317. Optional for students completing the Honors Program.
9. **Other requirements:** PSY 100, SOC 101, BIO 302, and one of PHI 235 (recommended), PHI 100, PHI 230, PHI 231, PHI 233. (BIO 302 is optional for students completing the Honors Program).
10. **Recommended courses:** INT 107 and INT 207 are highly recommended, but not required.

Pre-medical Studies Notes

- a. Inclusion of BIO 480, Cell Biology, is highly recommended.
- b. Physician assistant, pharmacy, optometry, and physical therapy schools require two semesters of anatomy and physiology (8 credits). This requirement can be met by combining BIO 335, Human Anatomy, and BIO 377 & 378 Medical Physiology and lab (recommended); or by combining BIO 208, Anatomy and Physiology, and BIO 377 & 378 Medical Physiology and lab. Note that BIO 208 does not count toward the Biology or Zoology degree requirements. Students should research admission requirements of specific schools and are strongly encouraged to work with the Health Professions Career Counselor in the Career Center.
- c. Students pursuing this concentration may want to consider a minor in Neuroscience, Chemistry, Psychology, or Business.
- d. Pre-medical studies students are strongly encouraged to work with the Career Center's Health Professions Career Counselor throughout their entire undergraduate program.

Bachelor of Science Core Requirements-New England College of Optometry 3+

Students in the UM-NECO 3+ program complete 90 credits at UMaine over three years, moving on to NECO in their fourth year. Upon completion of the first year at NECO, 30 credits are transferred back to UMaine and students are awarded their BS degree.

1. Basic Biology:

BIO 100, BIO 200 (Minimum grade of C required in each)

2. General Chemistry:

CHY 121, CHY 122, CHY 123, and CHY 124

3. Organic Chemistry I:

CHY 251 and CHY 253

4. Biochemistry

BMB 322 and BMB 323

5. Physics I:

PHY 111 or PHY 121

6. Physics II:

PHY 112 or PHY 122

7. Calculus:

MAT 116 or MAT 126 or MAT 136

8. Statistics:

STS 132

9. Biological Sciences Area Credits (see below): minimum of 17 credits including courses from Biological Science Areas as noted for each area. At least three lab courses (L) must be taken among the BIO area courses. A minimum of 12 of these credits

must be taken at University of Maine. For area I, students take BMB 300 to completely fill the area. At least one animal course (A) and one plant (P) from the BIO areas must be taken.

10. Required Course:

NFA 117

11. Satisfy general education requirements:

Capstone and Writing Intensive within major are satisfied by the NECO course credits. Students must take PSY 100 (fills Social Contexts) and either ENG 315 or ENG 317 (fills Writing Intensive)

12. Courses recommended but not required:

INT 107 and INT 207

13. **Minimum average GPA:** 2.0 is required for all courses listed in items 1-9 above to complete UMaine degree. NECO requires an overall GPA of 3.3 and a within-major GPA of 3.1.

14. Upon completion of the first year at NECO, the student must have NECO send a transcript to UMaine. Successful transfer of 30 credits (minimum grade of C-) from NECO to UMaine is required to complete the UMaine Biology degree. The degree will be awarded at the end of the semester in which the NECO first year transcript is received by UM Office of Student Records.

Biological Sciences Areas for the B.S. or B.A

Area I. Cell and Molecular Biology

Students must take BMB 280 or BIO 480 or 6 total credits from the area.

- BIO 336 - Developmental Biology **Credits:** 4
- BIO 438 - Morphogenesis in Development and Disease **Credits:** 3
- BIO 450 - Histology **Credits:** 4
- BIO 474 - Neurobiology **Credits:** 3
- BIO 480 - Cell Biology **Credits:** 3
- BIO 483 - Cell Biology Laboratory **Credits:** 2
- 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
- A - BIO 336, BIO 474
- C - BIO 438, BIO 450, BIO 480 & BIO 483 taken together

Area II. Genetics and Evolution

Both courses are required.

- BIO 350 - Concepts and Applications of Genetics **Credits:** 3
- BIO 365 - Fundamentals of Evolution **Credits:** 3

Area III. Physiology

Students must take 3 credits from the area.

- BIO 307 - Interdisciplinary Neuroscience **Credits: 3**
- BIO 311 - Animal Ecophysiology **Credits: 3**
- BIO 377 - Medical Physiology **Credits: 3**
- BIO 378 - Medical Physiology Laboratory **Credits: 2**
- BIO 452 - Plant Physiology **Credits: 3**
- BIO 453 - Plant Physiology Laboratory **Credits: 1**
- BMB 440 - Introductory Immunology **Credits: 3**
- BMB 441 - Introductory Immunology Laboratory **Credits: 1**
- L - BIO 378, BIO 453, BMB 431, BMB 441
- A - BIO 307, BIO 311, BIO 377, BMB 440
- P - BIO 452

Area IV. Biodiversity

Students must take 3 credits from the area

- 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**
- SFR 439 - Biology of Woody Plants **Credits: 3**
- L - BIO 310, BIO 326, BIO 331, BIO 335, BIO 353, BIO 430, BIO 432, BIO 433, BIO 464, SFR 439
- A - BIO 326, BIO 329, BIO 335, BIO 353, BIO 430, BIO 433
- P - BIO 310, BIO 342, BIO 432, BIO 464, SFR 439

Area V. Ecology and Behavior

Students must take BIO 319 or SMS 300 or 6 total credits from the area.

- AVS 254 - Introduction to Animal Microbiomes **Credits: 3**
- BIO 205 - Field Natural History of Maine **Credits: 4**
- BIO 309 - Sustainability and Conservation Travel Study **Credits: 3**
- BIO 319 - General Ecology **Credits: 3**
- BIO 354 - Animal Behavior **Credits: 3**
- BIO 411 - Insect Ecology **Credits: 3**
- BIO 429 - Plant-Insect Interaction **Credits: 3**
- BIO 431 - Emerging Infectious Diseases **Credits: 4**

- BIO 434 - Avian Biology and Ecology **Credits: 3**
- BIO 437 - Avian Biology and Ecology Laboratory **Credits: 1**
- BIO 455 - Biological Invasions **Credits: 3**
- 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**
- PSE 457 - Plant Pathology **Credits: 4**
- SMS 300 - Marine Ecology **Credits: 3**
- WLE 200 - Ecology **Credits: 3**
- WLE 201 - Ecology Laboratory **Credits: 3**
- L - BIO 205, BIO 309, BIO 431, BIO 437, BIO 463, BIO 476, EES 141, EES 475, PSE 457, WLE 201
- A - AVS 254, BIO 354, BIO 411, BIO 434
- P - BIO 429, PSE 457
- C - BIO 431, BIO 463

Alternate Area

Courses within the Alternate Area can be included in the 27 total area minimum credits, but do not count toward any specific area except by prior arrangement with the program coordinator.

- BIO 387 - Undergraduate Research in Biology **Credits: 1-6**
- 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**
- BMB 155 - Genome Discovery II: From DNA to Genes **Credits: 3**
or
- HON 155 - Genome Discovery II: From DNA to Genes **Credits: 3**
- BMB 400 - Molecular Genetics **Credits: 3**
- BMB 402 - Introduction to Bioinformatics **Credits: 3**
- * HON 498 - Honors Thesis/Research I **Credits: 3**
- * HON 499 - Honors Thesis/Research II **Credits: 3**
- L - BMB/HON 155
- C - BIO 392, BIO 402, HON 499
*Honors topic must be approved by Program Coordinator or Director.

Required Courses in Suggested Sequence for the B.S. in Biology

Sequences may vary depending on student interests, transfer or AP credits, and beginning math level. The following is intended as an example of a 4-year sequence for this program and does not replace academic advising. Students and advisors should work together, carefully reviewing curriculum requirements, noting timing of courses and prerequisites, to design a program best suited to the individual student.

Students are encouraged to take 30 credits per academic year (fall, winter, spring, and summer combined) to achieve the 120 credit minimum for graduation.

First Year - First Semester

- BIO 100 - Basic Biology **Credits: 4**
- ENG 101 - College Composition **Credits: 3**
- MAT 111 - Algebra for College Mathematics **Credits: 3**
or
- MAT 116 - Introduction to Calculus **Credits: 3**
- NFA 117 - First-Year Success Seminar **Credits: 1**
- General Education Requirement or free electives **Credits: 3**
- Free Elective: **Credits: 1**

First Year - Second Semester

- BIO 200 - Biology of Organisms **Credits: 4**
- BMB 280 - Introduction to Molecular and Cellular Biology **Credits: 3**
- MAT 116 - Introduction to Calculus **Credits: 3**
or
- General Education Requirement or free electives **Credits: 3**
- General Education Requirement **Credits: 3**
- Elective **Credit: 2**

Second Year - First Semester

- BIO 350 - Concepts and Applications of Genetics **Credits: 3**
- BIO Area Credits: 4 (e.g., area IV with lab, plant or animal) **Either:**
BIO 326 - General Entomology **Credits: 4**
or
BIO 329 - Vertebrate Biology **Credits: 3**
with
BIO 331 - Vertebrate Biology Laboratory **Credits: 1**
or
BIO 342 - Plants in Our World **Credits: 3**
or
BIO 353 - Invertebrate Zoology **Credits: 4**
or
BIO 432 - Biology of the Fungi **Credits: 4**
- CHY 121 - General Chemistry I **Credits: 3**
with
- CHY 123 - General Chemistry Laboratory I **Credits: 1**
- General Education Requirement **Credits: 3**
- Elective **Credit: 1 or 2**

Second Year - Second Semester

- BIO 319 - General Ecology **Credits: 3**
- BIO 365 - Fundamentals of Evolution **Credits: 3**
- CHY 122 - General Chemistry II **Credits: 3**
with

- CHY 124 - General Chemistry Laboratory II **Credits: 1**
- General Education Requirement **Credit: 3**
- Elective **Credits: 2**

Third Year - First Semester

- BIO area III or IV or capstone Either:
BIO 311 - Animal Ecophysiology **Credits: 3**
with
BIO 378 - Medical Physiology Laboratory **Credits: 2**
or
BIO 377 - Medical Physiology **Credits: 3**
with
BIO 378 - Medical Physiology Laboratory **Credit: 2**
or
BIO 342 - Plants in Our World **Credits: 3**
or
BIO 430 - Ecology and Systematics of Aquatic Insects **Credits: 4**
or
BIO 432 - Biology of the Fungi **Credits: 4**
or
BIO 438 - Morphogenesis in Development and Disease **Credits: 3**
or
BIO 452 - Plant Physiology **Credits: 3**
with
BIO 453 - Plant Physiology Laboratory **Credits: 1**
or
BIO 463 - River Ecology **Credits: 4**
- CHY 251 - Organic Chemistry I **Credits: 3**
with
- CHY 253 - Organic Chemistry Laboratory I **Credits: 2**
or
- BMB 221 - Organic Chemistry **Credits: 3**
with
- BMB 222 - Laboratory in Organic Chemistry **Credits: 1**
- STS 132 - Principles of Statistical Inference **Credits: 3**
- General Education Requirement - Writing Intensive **Credits: 3**
- Elective **Credits: 0-3**

Third Year - Second Semester

- BMB 322 - Biochemistry **Credits: 3**
with
- BMB 323 - Biochemistry Laboratory **Credits: 2**
or
- CHY 252 - Organic Chemistry II **Credits: 3**
with
- CHY 254 - Organic Chemistry Laboratory II **Credits: 2**
- BIO area IV or V or capstone, Either :
BIO 310 - Plant Biology **Credits: 4**

- or
- BIO 335 - Human Anatomy **Credits: 4**
- or
- BIO 431 - Emerging Infectious Diseases **Credits: 4**
- or
- BIO 433 - Mammalogy **Credits: 4**
- or
- BIO 476 - Paleoecology **Credits: 4**
- or
- BIO 434 - Avian Biology and Ecology **Credits: 3**
- with
- BIO 437 - Avian Biology and Ecology Laboratory **Credits: 1**
- General Education Requirements **Credits: 3**
- Elective **Credits: 3**

Fourth Year - First Semester

- PHY 111 - General Physics I **Credits: 4**
- Capstone or BIO course with lab or BIO elective Either:
BIO 430 - Ecology and Systematics of Aquatic Insects **Credits: 4**
or
BIO 438 - Morphogenesis in Development and Disease **Credits: 3**
or
BIO 468 - Lake Ecology **Credits: 3**
- General Education Requirements **Credits: 3**
- Electives **Credits: 4 or 5**

Fourth Year- Second Semester

- PHY 112 - General Physics II **Credits: 4**
- Capstone or BIO course with lab Either:
BIO 431 - Emerging Infectious Diseases **Credits: 4**
or
BIO 450 - Histology **Credits: 4**
or
BIO 476 - Paleoecology **Credits: 4**
or
BIO 434 - Avian Biology and Ecology **Credits: 3**
- with
- BIO 437 - Avian Biology and Ecology Laboratory **Credits: 1**
- or
- BIO 480 - Cell Biology **Credits: 3**
- with
- BIO 483 - Cell Biology Laboratory **Credits: 2**
- General Education Requirements **Credits: 3**
- Electives **Credits: 3 or 4**

Required Courses in Suggested Sequence for the B.S. in Biology With Honors, Chemistry taken in Second Year

Sequences may vary depending on student interests, transfer or AP credits, and beginning math level. The following is intended as an example of a 4-year sequence for this program and does not replace academic advising. Students and advisors should work together, carefully reviewing curriculum requirements, noting timing of courses and prerequisites, to design a program best suited to the individual student.

Students are encouraged to take 30 credits per academic year (fall, winter, spring, and summer combined) to achieve the 120 credit minimum for graduation.

Honors College

Students enrolled in the Honors College will find that the program works well with their major, replacing General Education and capstone requirements. Honors students should work with their advisor to adapt the suggested course sequences below to accommodate their Honors courses.

First Year - First Semester

- BIO 100 - Basic Biology **Credits: 4**
- HON 111 - Civilizations: Past, Present and Future I **Credits: 4**
- MAT 111 - Algebra for College Mathematics **Credits: 3**
or
- MAT 116 - Introduction to Calculus **Credits: 3**
- NFA 117 - First-Year Success Seminar **Credits: 1**
- Elective **Credits: 3**

First Year- Second Semester

- BIO 200 - Biology of Organisms **Credits: 4**
- BMB 280 - Introduction to Molecular and Cellular Biology **Credits: 3**
- MAT 116 - Introduction to Calculus **Credits: 3**
or
- Elective **Credits: 3**
- HON 112 - Civilizations: Past, Present and Future II **Credits: 4**
- HON 170 - Currents and Context **Credits: 1**
- HON 180 - A Cultural Odyssey **Credits: 1**

Second Year - First Semester

- BIO 350 - Concepts and Applications of Genetics **Credits: 3**
- BIO Area Credits: 4 (e.g., area IV with lab, plant or animal) Either:
BIO 326 - General Entomology **Credits: 4**
or
BIO 329 - Vertebrate Biology **Credits: 3**
with
BIO 331 - Vertebrate Biology Laboratory **Credits: 1**
or
BIO 342 - Plants in Our World **Credits: 3**

- or
- BIO 353 - Invertebrate Zoology **Credits: 4**
- or
- BIO 432 - Biology of the Fungi **Credits: 4**
- CHY 121 - General Chemistry I **Credits: 3**
with
- CHY 123 - General Chemistry Laboratory I **Credits: 1**
- HON 211 - Civilizations: Past, Present and Future III **Credits: 4**
Elective **Credits: 0-1**

Second Year - Second Semester

- BIO 319 - General Ecology **Credits: 3**
- BIO 365 - Fundamentals of Evolution **Credits: 3**
- CHY 122 - General Chemistry II **Credits: 3**
with
- CHY 124 - General Chemistry Laboratory II **Credits: 1**
- HON 170 - Currents and Context **Credits: 1**
- HON 180 - A Cultural Odyssey **Credits: 1**
- HON 212 - Civilizations: Past, Present and Future IV **Credits: 4**

Third Year - First Semester

- BIO area III or IV or capstone Either:
BIO 311 - Animal Ecophysiology **Credits: 3**
with
BIO 378 - Medical Physiology Laboratory **Credits: 2**
or
BIO 377 - Medical Physiology **Credits: 3**
with
BIO 378 - Medical Physiology Laboratory **Credits: 2**
or
BIO 342 - Plants in Our World **Credits: 3**
or
BIO 430 - Ecology and Systematics of Aquatic Insects **Credits: 4**
or
BIO 432 - Biology of the Fungi **Credits: 4**
or
BIO 438 - Morphogenesis in Development and Disease **Credits: 3**
or
BIO 452 - Plant Physiology **Credits: 3**
with
BIO 453 - Plant Physiology Laboratory **Credits: 1**
or
BIO 463 - River Ecology **Credits: 4**
- CHY 251 - Organic Chemistry I **Credits: 3**
with
- CHY 253 - Organic Chemistry Laboratory I **Credits: 2**
or
- BMB 221 - Organic Chemistry **Credits: 3**
with

- BMB 222 - Laboratory in Organic Chemistry **Credits: 1**
- HON 3XX - Honors Tutorial **Credits: 3**
- STS 132 - Principles of Statistical Inference **Credits: 3**
- Elective **Credits: 1-2**

Third Year - Second Semester

- BMB 322 - Biochemistry **Credits: 3**
with
- BMB 323 - Biochemistry Laboratory **Credits: 2**
or
- CHY 252 - Organic Chemistry II **Credits: 3**
with
- CHY 254 - Organic Chemistry Laboratory II **Credits: 2**
- BIO area IV or V or capstone, Either
BIO 310 - Plant Biology **Credits: 4**
or
BIO 335 - Human Anatomy **Credits: 4**
or
BIO 431 - Emerging Infectious Diseases **Credits: 4**
or
BIO 433 - Mammalogy **Credits: 4**
or
BIO 434 - Avian Biology and Ecology **Credits: 3**
with
BIO 437 - Avian Biology and Ecology Laboratory **Credits: 1**
or
BIO 476 - Paleoecology **Credits: 4**
- HON 391 - Introduction to Thesis Research **Credits: 1**
- Elective **Credits: 5**

Fourth Year - First Semester

- BIO course with lab **Credits: 4**
- HON 498 - Honors Thesis/Research I **Credits: 3**
- PHY 111 - General Physics I **Credits: 4**
- Electives **Credits: 4**

Fourth Year - Second Semester

- BIO course with lab **Credits: 4**
- HON 499 - Honors Thesis/Research II **Credits: 3**
- PHY 112 - General Physics II **Credits: 4**
- Electives **Credits: 4**

Required Courses in Suggested Sequence for the B.S. in Biology with Pre-medical Studies Concentration, Chemistry taken in First Year

Sequences may vary depending on student interests, transfer or AP credits, and beginning math level. The following is intended as an example of a 4-year sequence for this program and does not replace academic advising. Students and advisors should work together, carefully reviewing curriculum requirements, noting timing of courses and prerequisites, to design a program best suited to the individual student.

Students are encouraged to take 30 credits per academic year (fall, winter, spring, and summer combined) to achieve the 120 credit minimum for graduation.

First Year - First Semester

- BIO 100 - Basic Biology **Credits: 4**
- CHY 121 - General Chemistry I **Credits: 3**
with
- CHY 123 - General Chemistry Laboratory I **Credits: 1**
- MAT 116 - Introduction to Calculus **Credits: 3**
- NFA 117 - First-Year Success Seminar **Credits: 1**
- SOC 101 - Introduction to Sociology **Credits: 3**

First Year - Second Semester

- BIO 200 - Biology of Organisms **Credits: 4**
- CHY 122 - General Chemistry II **Credits: 3**
with
- CHY 124 - General Chemistry Laboratory II **Credits: 1**
- ENG 101 - College Composition **Credits: 3**
- INT 107 - Career Exploration in Health Professions **Credits: 2**
- PSY 100 - General Psychology **Credits: 3**

Second Year - First Semester

- BIO 350 - Concepts and Applications of Genetics **Credits: 3**
- CHY 251 - Organic Chemistry I **Credits: 3**
with
- CHY 253 - Organic Chemistry Laboratory I **Credits: 2**
- INT 207 - Orientation to Health Professions **Credits: 2**
- STS 132 - Principles of Statistical Inference **Credits: 3**
- Elective **Credit: 1**

Second Year - Second Semester

- BIO 365 - Fundamentals of Evolution **Credits: 3**
- BMB 322 - Biochemistry **Credits: 3**
with
- BMB 323 - Biochemistry Laboratory **Credits: 2**

- CHY 252 - Organic Chemistry II **Credits: 3**
with
- CHY 254 - Organic Chemistry Laboratory II **Credits: 2**
- General Education requirement - Artistic & Creative Expression **Credits: 3**

Third Year - First Semester

- BIO 377 - Medical Physiology **Credits: 3**
with
- BIO 378 - Medical Physiology Laboratory **Credits: 2**
- BIO 302 - Critical Reading and Verbal Reasoning **Credits: 3**
or
- BIO 438 - Morphogenesis in Development and Disease **Credits: 3**
- PHI 235 - Biomedical Ethics **Credits: 3**
or
- BIO 342 - Plants in Our World **Credits: 3**
- PHY 111 - General Physics I **Credits: 4**

Third Year - Second Semester

- BIO 319 - General Ecology **Credits: 3**
- BIO 335 - Human Anatomy **Credits: 4**
or
- BIO 431 - Emerging Infectious Diseases **Credits: 4**
- PHY 112 - General Physics II **Credits: 4**
- General Education requirement - Cultural Diversity & International Perspectives **Credits: 3**
- Elective **Credit: 1**

Fourth Year - First Semester

- BMB 300 - General Microbiology **Credits: 3**
with
- BMB 305 - General Microbiology Laboratory **Credits: 2**
- BIO 302 - Critical Reading and Verbal Reasoning **Credits: 3**
or
- BIO 438 - Morphogenesis in Development and Disease **Credits: 3**
- ENG 317 - Business and Technical Writing **Credits: 3**
- PHI 235 - Biomedical Ethics **Credits: 3**
or
- BIO 342 - Plants in Our World **Credits: 3**
- Elective **Credits: 1**

Fourth Year- Second Semester

- BIO 335 - Human Anatomy **Credits: 4**
or
- BIO 388 - Research Capstone in Biology **Credits: 1-3**

- or
- BIO 431 - Emerging Infectious Diseases **Credits: 4**
- or
- BIO 450 - Histology **Credits: 4**
- or
- BIO 480 - Cell Biology **Credits: 3**
- with
- BIO 483 - Cell Biology Laboratory **Credits: 2**
- Remaining General Education Requirements or elective **Credits: 3**
- Elective **Credit: 8 or 9**

Required Courses in Suggested Sequence for the B.S. in Biology with Pre-medical Studies Concentration, Chemistry taken in Second Year

Sequences may vary depending on student interests, transfer or AP credits, and beginning math level. The following is intended as an example of a 4-year sequence for this program and does not replace academic advising. Students and advisors should work together, carefully reviewing curriculum requirements, noting timing of courses and prerequisites, to design a program best suited to the individual student.

Students are encouraged to take 30 credits per academic year (fall, winter, spring, and summer combined) to achieve the 120 credit minimum for graduation.

First Year - First Semester

- BIO 100 - Basic Biology **Credits: 4**
- ENG 101 - College Composition **Credits: 3**
- MAT 111 - Algebra for College Mathematics **Credits: 3**
- or
- MAT 116 - Introduction to Calculus **Credits: 3**
- NFA 117 - First-Year Success Seminar **Credits: 1**
- SOC 101 - Introduction to Sociology **Credits: 3**
- Elective **Credits: 1**

First Year - Second Semester

- BIO 200 - Biology of Organisms **Credits: 4**
- INT 107 - Career Exploration in Health Professions **Credits: 2**
- MAT 116 - Introduction to Calculus **Credits: 3**
- or
- Electives **Credits: 3**
- PSY 100 - General Psychology **Credits: 3**
- General Education requirement - Artistic & Creative Expression **Credits: 3**

Second Year - First Semester

- BIO 350 - Concepts and Applications of Genetics **Credits: 3**
- CHY 121 - General Chemistry I **Credits: 3**
- with

- CHY 123 - General Chemistry Laboratory I **Credits: 1**
- INT 207 - Orientation to Health Professions **Credits: 2**
- STS 132 - Principles of Statistical Inference **Credits: 3**
- General Education requirement - Cultural Diversity & International Perspectives **Credits: 3**

Second Year - Second Semester

- BIO 319 - General Ecology **Credits: 3**
- BIO 365 - Fundamentals of Evolution **Credits: 3**
- CHY 122 - General Chemistry II **Credits: 3**
with
- CHY 124 - General Chemistry Laboratory II **Credits: 1**
- PHI 235 - Biomedical Ethics **Credits: 3**
- Elective **Credits: 2**

Third Year - First Semester

- CHY 251 - Organic Chemistry I **Credits: 3**
with
- CHY 253 - Organic Chemistry Laboratory I **Credits: 2**
- BIO 302 - Critical Reading and Verbal Reasoning **Credits: 3**
or
- BIO 438 - Morphogenesis in Development and Disease **Credits: 3**
- BIO 377 - Medical Physiology **Credits: 3**
with
- BIO 378 - Medical Physiology Laboratory **Credits: 2**
- ENG 317 - Business and Technical Writing **Credits: 3**
or
- BIO 342 - Plants in Our World **Credits: 3**

Third Year - Second Semester

- CHY 252 - Organic Chemistry II **Credits: 3**
with
- CHY 254 - Organic Chemistry Laboratory II **Credits: 2**
- BMB 322 - Biochemistry **Credits: 3**
and
- BMB 323 - Biochemistry Laboratory **Credits: 2**
- BIO 335 - Human Anatomy **Credits: 4**
or
- BIO 431 - Emerging Infectious Diseases **Credits: 4**

Fourth Year - First Semester

- PHY 111 - General Physics I **Credits: 4**
- BMB 300 - General Microbiology **Credits: 3**
- BMB 305 - General Microbiology Laboratory **Credits: 2**

- BIO 302 - Critical Reading and Verbal Reasoning **Credits: 3**
or
- BIO 438 - Morphogenesis in Development and Disease **Credits: 3**
- ENG 317 - Business and Technical Writing **Credits: 3**
or
- BIO 342 - Plants in Our World **Credits: 3**

Fourth Year - Second Semester

- PHY 112 - General Physics II **Credits: 4**
- BIO 335 - Human Anatomy **Credits: 4**
Or
Capstone Either:
BIO 388 - Research Capstone in Biology **Credits: 1-3**
or
BIO 431 - Emerging Infectious Diseases **Credits: 4**
or
BIO 450 - Histology **Credits: 4**
or
BIO 480 - Cell Biology **Credits: 3**
with
BIO 483 - Cell Biology Laboratory **Credits: 2**
- General Education requirement or Elective **Credits: 3**
- Elective **Credits: 3-5**

Required Courses in Suggested Sequence for the B.S. in Biology with Ecology Concentration

Sequences may vary depending on student interests, transfer or AP credits, and beginning math level. The following is intended as an example of a 4-year sequence for this program and does not replace academic advising. Students and advisors should work together, carefully reviewing curriculum requirements, noting timing of courses and prerequisites, to design a program best suited to the individual student.

Students are encouraged to take 30 credits per academic year (fall, winter, spring, and summer combined) to achieve the 120 credit minimum for graduation.

First Year - First Semester

- BIO 100 - Basic Biology **Credits: 4**
- ENG 101 - College Composition **Credits: 3**
- MAT 111 - Algebra for College Mathematics **Credits: 3**
or
- MAT 116 - Introduction to Calculus **Credits: 3**
- NFA 117 - First-Year Success Seminar **Credits: 1**
- General Education requirement or Elective **Credits: 3**
- Elective **Credits: 1**

First Year -Second Semester

- BIO 200 - Biology of Organisms **Credits: 4**
- BMB 280 - Introduction to Molecular and Cellular Biology **Credits: 3**
- MAT 116 - Introduction to Calculus **Credits: 3**
or
- Elective **Credits: 3**
- General Education requirement **Credits: 3**
- Elective **Credits: 2**

Second Year - First Semester

- BIO 205 - Field Natural History of Maine **Credits: 4**
- BIO 350 - Concepts and Applications of Genetics **Credits: 3**
- BIO 329 - Vertebrate Biology **Credits: 3**
with
- BIO 331 - Vertebrate Biology Laboratory **Credits: 1**
or
- BIO 353 - Invertebrate Zoology **Credits: 4**
- CHY 121 - General Chemistry I **Credits: 3**
with
- CHY 123 - General Chemistry Laboratory I **Credits: 1**

Second Year - Second Semester

- BIO 319 - General Ecology **Credits: 3**
- BIO 365 - Fundamentals of Evolution **Credits: 3**
- BIO 310 - Plant Biology **Credits: 4**
or
- BIO 335 - Human Anatomy **Credits: 4**
or
- BIO Elective **Credits: 4**
- CHY 122 - General Chemistry II **Credits: 3**
with
- CHY 124 - General Chemistry Laboratory II **Credits: 1**
- Elective **Credits: 1**

Third Year - First Semester

- BMB 221 - Organic Chemistry **Credits: 3**
with
- BMB 222 - Laboratory in Organic Chemistry **Credits: 1**
- BIO 311 - Animal Ecophysiology **Credits: 3**
or
- BIO 377 - Medical Physiology **Credits: 3**
- BIO 378 - Medical Physiology Laboratory **Credits: 2**
or

- General Education requirement **Credits: 3**
- Environmental Influences course **Credits: 3**
- General Education requirement **Credits: 3**

Third Year - Second Semester

- BIO 354 - Animal Behavior **Credits: 3**
- BMB 322 - Biochemistry **Credits: 3**
and
- BMB 323 - Biochemistry Laboratory **Credits: 2**
- ENG 317 - Business and Technical Writing **Credits: 3**
- WLE 220 - Introduction to Ecological Statistics **Credits: 4**

Fourth Year - First Semester

- BIO 464 - Taxonomy of Vascular Plants **Credits: 4**
- Capstone or BIO Area Either:
BIO 463 - River Ecology **Credits: 4**
or
BIO 468 - Lake Ecology **Credits: 4**
- PHY 111 - General Physics I **Credits: 4**
- General Education Requirement **Credits: 3**

Fourth Year - Second Semester

- PHY 112 - General Physics II **Credits: 4**
- Capstone or BIO Area Either:
BIO 431 - Emerging Infectious Diseases **Credits: 4**
or
BIO 433 - Mammalogy **Credits: 4**
or
BIO 476 - Paleoecology **Credits: 4**
or
BIO 480 - Cell Biology **Credits: 3**
with
BIO 483 - Cell Biology Laboratory **Credits: 2**
- General Education requirement **Credits: 6**
- Elective **Credits: 1**

Courses in Suggested Sequence for the B.S. in Biology, NECO 3+

First Year - First Semester

- BIO 100 - Basic Biology **Credits: 4**
- CHY 121 - General Chemistry I **Credits: 3**
- CHY 123 - General Chemistry Laboratory I **Credits: 1**
- ENG 101 - College Composition **Credits: 3**

- MAT 116 - Introduction to Calculus **Credits: 3**
- NFA 117 - First-Year Success Seminar **Credits: 1**

First Year - Second Semester

- BIO 200 - Biology of Organisms **Credits: 4**
- CHY 122 - General Chemistry II **Credits: 3**
- CHY 124 - General Chemistry Laboratory II **Credits: 1**
- INT 107 - Career Exploration in Health Professions **Credits: 2**
- PSY 100 - General Psychology **Credits: 3**
- STS 132 - Principles of Statistical Inference **Credits: 3**

Second Year -First Semester

- BIO 350 - Concepts and Applications of Genetics **Credits: 3**
- BIO 377 - Medical Physiology **Credits: 3**
- BIO 378 - Medical Physiology Laboratory **Credits: 2**
- CHY 251 - Organic Chemistry I **Credits: 3**
- CHY 253 - Organic Chemistry Laboratory I **Credits: 2**
- INT 207 - Orientation to Health Professions **Credits: 2**

Second Year -Second Semester

- BIO 335 - Human Anatomy **Credits: 4**
- BIO 365 - Fundamentals of Evolution **Credits: 3**
- BMB 322 - Biochemistry **Credits: 3**
- BMB 323 - Biochemistry Laboratory **Credits: 2**
- PHI 235 - Biomedical Ethics **Credits: 3**

Third Year - First Semester

- BIO 342 - Plants in Our World **Credits: 3**
- BMB 300 - General Microbiology **Credits: 3**
- BMB 305 - General Microbiology Laboratory **Credits: 2**
- PHY 111 - General Physics I **Credits: 4**
- ENG 317 - Business and Technical Writing **Credits: 3**

Third Year - Second Semester

- BIO 319 - General Ecology **Credits: 3**
- PHY 112 - General Physics II **Credits: 4**
- SOC 101 - Introduction to Sociology **Credits: 3**
- General Education Requirement (Artistic and Creative Expression) **Credits: 3**
- General Education Requirement (Cultural Diversity and International Perspectives) **Credits: 3**

Fourth Year

Student attends NECO and transfers courses back to UMaine at the end of the academic year. Capstone and writing-intensive-within-major are waived.

Required Courses in Suggested Sequence for the B.A. in Biology

Sequences may vary depending on student interests, transfer or AP credits, and beginning math level. The following is intended as an example of a 4-year sequence for this program and does not replace academic advising. Students and advisors should work together, carefully reviewing curriculum requirements, noting timing of courses and prerequisites, to design a program best suited to the individual student.

Students are encouraged to take 30 credits per academic year (fall, winter, spring, and summer combined) to achieve the 120 credit minimum for graduation.

The BA sequence is intentionally flexible to allow students to pursue a minor or second major. The sequence here outlined is only one of many possibilities. Students are encouraged to work with their academic advisor to develop a customized sequence to meet their academic goals.

First Year - First Semester

- BIO 100 - Basic Biology **Credits: 4**
- MAT 111 - Algebra for College Mathematics **Credits: 3**
- ENG 101 - College Composition **Credits: 3**
- NFA 117 - First-Year Success Seminar **Credits: 1**
- General Education requirement **Credit: 3**

First Year - Second Semester

- BIO 200 - Biology of Organisms **Credits: 4**
- BMB 280 - Introduction to Molecular and Cellular Biology **Credits: 3**
- STS 132 - Principles of Statistical Inference **Credits: 3**
- General Education Requirement Credits: 6

Second Year - First Semester

- BIO 350 - Concepts and Applications of Genetics **Credits: 3**
- BMB 207 - Fundamentals of Chemistry **Credits: 3**
with
- BMB 209 - Fundamentals of Chemistry Laboratory **Credits: 1**
- BIO 205 - Field Natural History of Maine **Credits: 4**
or
- BIO Area (e.g., area IV with lab, plant or animal) **Credits: 4**
- Course for minor **Credits: 3**
- Elective **Credit: 1**

Second Year - Second Semester

- BIO 365 - Fundamentals of Evolution **Credits: 3**
- CHY or PHY or ERS course Credits: 3

- BIO 319 - General Ecology **Credits: 3**
- General Education Requirement **Credits: 3**
- Course for minor **Credits: 3**

Third Year - First Semester

- BIO 329 - Vertebrate Biology **Credits: 3**
with
- BIO 331 - Vertebrate Biology Laboratory **Credits: 1**
or
- Other BIO Area IV course **Credits: 4**
- BIO 377 - Medical Physiology **Credits: 3**
with
- BIO 378 - Medical Physiology Laboratory **Credits: 2**
or
- BIO 311 - Animal Ecophysiology **Credits: 3**
with
- BIO 378 - Medical Physiology Laboratory **Credits: 2**
or
- Other BIO Area II course **Credits: 5**
- Plant requirement:
BIO 342 - Plants in Our World **Credits: 3**
or
BIO 432 - Biology of the Fungi **Credits: 4**
or
BIO 452 - Plant Physiology **Credits: 3**
or
BIO 464 - Taxonomy of Vascular Plants **Credits: 4**
or
PSE 457 - Plant Pathology **Credits: 4**
- Course for minor **Credits: 3**

Third Year - Second Semester

- BIO 335 - Human Anatomy **Credits: 4**
or
- Other BIO Lab Course **Credits: 4**
- BIO 354 - Animal Behavior **Credits: 3**
- CHY or PHY or ERS course **Credits: 3**
- Course for minor **Credits: 3**
- General Education Requirement **Credits: 3**

Fourth Year - First Semester

- Capstone or BIO Lab course (choose one):
BIO 438 - Morphogenesis in Development and Disease **Credits: 3**

or

BIO 463 - River Ecology **Credits: 4**

or

BIO 468 - Lake Ecology **Credits: 3**

- Course for minor **Credits: 3**
- Remaining BIO requirements or free elective **Credits: 4**
- Remaining General education requirements **Credits: 3**
- Elective **Credits: 1**

Fourth Year- Second Semester

Capstone or BIO lab course:

- BIO 431 - Emerging Infectious Diseases **Credits: 4**
or
- BIO 433 - Mammalogy **Credits: 4**
or
- BIO 434 - Avian Biology and Ecology **Credits: 3**
with
- BIO 437 - Avian Biology and Ecology Laboratory **Credits: 1**
or
- BIO 450 - Histology **Credits: 4**
or
- BIO 480 - Cell Biology **Credits: 3**
with
- BIO 483 - Cell Biology Laboratory **Credits: 2**
- Course for minor **Credits: 3**
- Any remaining General Education requirements, or free elective **Credit: 8**

Required Courses in Suggested Sequence for the B.A. in Biology with Entomology Concentration

Sequences may vary depending on student interests, transfer or AP credits, and beginning math level. The following is intended as an example of a 4-year sequence for this program and does not replace academic advising. Students and advisors should work together, carefully reviewing curriculum requirements, noting timing of courses and prerequisites, to design a program best suited to the individual student.

Students are encouraged to take 30 credits per academic year (fall, winter, spring, and summer combined) to achieve the 120 credit minimum for graduation.

The BA sequence is intentionally flexible to allow students to pursue a minor or second major. The sequence here outlined is only one of many possibilities. Students are encouraged to work with their academic advisor to develop a customized sequence to meet their academic goals.

First Year - First Semester

- BIO 100 - Basic Biology **Credits: 4**
- ENG 101 - College Composition **Credits: 3**
- MAT 111 - Algebra for College Mathematics **Credits: 3**

- NFA 117 - First-Year Success Seminar **Credits: 1**
- General Education Requirement **Credits: 3**

First Year -Second Semester

- BIO 200 - Biology of Organisms **Credits: 4**
- BMB 280 - Introduction to Molecular and Cellular Biology **Credits: 3**
- STS 132 - Principles of Statistical Inference **Credits: 3**
- General Education Requirement **Credits: 6**

Second Year - First Semester

- BIO 205 - Field Natural History of Maine **Credits: 4**
- BIO 326 - General Entomology **Credits: 4**
- BIO 350 - Concepts and Applications of Genetics **Credits: 3**
- BMB 207 - Fundamentals of Chemistry **Credits: 3**
with
- BMB 209 - Fundamentals of Chemistry Laboratory **Credits: 1**

Second Year - Second Semester

- BIO 310 - Plant Biology **Credits: 4**
- BIO 319 - General Ecology **Credits: 3**
- BIO 365 - Fundamentals of Evolution **Credits: 3**
- CHY or PHY or ERS course **Credits: 3**
- Course for minor **Credits: 3**

Third Year - First Semester

- CHY or PHY or ERS course **Credits: 3**
- BIO 342 - Plants in Our World **Credits: 3**
or
- BIO 430 - Ecology and Systematics of Aquatic Insects **Credits: 4**
or
- BIO 432 - Biology of the Fungi **Credits: 4**
or
- PSE 457 - Plant Pathology **Credits: 4**
- BIO 464 - Taxonomy of Vascular Plants **Credits: 4**
- Elective **Credits: 1**
- Course for minor **Credits: 3**

Third Year - Second Semester

- BIO 411 - Insect Ecology **Credits: 3**
or
- BIO 429 - Plant-Insect Interaction **Credits: 3**

- EES 140 - Soil Science **Credits: 3**
with
- EES 141 - Soil Science Laboratory **Credits: 1**
or
- Capstone
- Course for minor **Credits: 3**
- General Education Requirement **Credits: 6**

Fourth Year - First Semester

- BIO 452 - Plant Physiology **Credits: 3**
with
- BIO 453 - Plant Physiology Laboratory **Credits: 1**
- BIO 342 - Plants in Our World **Credits: 3**
or
- BIO 430 - Ecology and Systematics of Aquatic Insects **Credits: 4**
or
- BIO 432 - Biology of the Fungi **Credits: 4**
or
- PSE 457 - Plant Pathology **Credits: 4**
- Course for minor **Credits: 6**
- Elective **Credits: 1**

Fourth Year - Second Semester

- BIO 411 - Insect Ecology **Credits: 3**
or
- BIO 429 - Plant-Insect Interaction **Credits: 3**
- EES 140 - Soil Science **Credits: 3**
with
- EES 141 - Soil Science Laboratory **Credits: 1**
or
- Capstone
- Course for minor **Credits: 3**
- General Education Requirement **Credits: 6**

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: A C or higher is required in BIO 100 and BIO 200.

Other GPA requirements to graduate: A minimum cumulative GPA of 2.0 in all courses in Biological Sciences Areas, affiliated science, and math courses combined.

Required Course(s) for fulfilling Capstone Experience: BIO 388 or BIO 392 or BIO 402 or BIO 463 or HON 498 & HON 499* or both BIO 480 and 483. For specific requirements see the curricula for individual concentrations.

*The thesis topic must be in Botany and the thesis advisor should be in the School of Biology and Ecology.

Contact Information: Ann Dieffenbacher-Krall, Undergraduate Coordinator, 100 Murray Hall, (207)581-2540, annd@maine.edu

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.

The Botany major 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, evolution, physiology, anatomy, evolution and biodiversity, and ecology. Students enrolled in the Honors College will find the program complementary to their degree studies. Each student works with an academic advisor 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. Students wishing to spend a semester studying abroad are advised to discuss this option with their advisor early in their program.

The B.S. and B.A. degrees in Botany are 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/

Students choosing Botany as a second major are not required to complete a Botany capstone provided the student completes a capstone for their first major.

Students majoring in Botany are not eligible for a second major in Biology because of extensive overlap in the requirements for these degrees.

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, have a cumulative GPA of 2.0 or better, and a grade of C or better in MAT 111 or no grade record in MAT 111 and a score 30 or higher on the Math Placement Exam.

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, physics, and social sciences required. The B.S. requires more in-depth study of chemistry, math, and physics while the B.A. requires a minor or more social sciences and humanities. The B.S. provides preparation for laboratory or field scientists while the B.A. ensures a broad liberal arts education and allows more flexibility for minors and double majors, allowing students to build career-enhancing skills.

Expertise in Botany is essential to ensure that sound science is the foundation for public policy, laws, regulations, business decisions, natural resource management, and communication about scientific ideas and issues. Educators, artists, writers, lawyers, economists, public policy makers and politicians, and business people in green industries, pharmaceuticals, biotechnology, and agribusiness greatly benefit from a strong background in science. Pairing a BA with a second major or minor builds strength for careers in education, communication, policy, law, or business. In addition, the critical thinking, reading, and writing skills gained through humanities and social sciences courses can significantly contribute to a career in science.

BA students are required to declare a minor or 2nd major in an approved subject outside of botany or biology or zoology, or complete additional General Education requirements as noted below. BA students are encouraged to explore career options through the University of Maine Career Center and with their academic advisor to select a minor or 2nd major that adds breadth to the academic program by developing skills and knowledge outside of the primary major.

Concentrations in the B.S and B.A. Degree in Botany

The Ecology Concentration is open to students in either the B.S. or B.A. degree program. This concentration is intended for students interested in exposure to ecological principles within the context of a rigorous biological sciences curriculum.

The Entomology Concentration is open to students in either the B.S. or the B.A. degree program. The concentration is intended to provide students with a broad understanding of the form and function of insects, their interactions with people and society, the study of insect conservation, and management in natural and human-derived systems.

Biology Club

Students majoring in Biology, Botany, and Zoology 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.

Honors College

Students enrolled in the Honors College will find that the program works well with their major, replacing General Education and capstone requirements. Honors students should work with their advisor to adapt the suggested course sequences below to accommodate their Honors courses.

Bachelor of Science Core Requirements

1. **Basic Biology:** BIO 100 and BIO 200 (Minimum grade of C required in each.)
2. **General Chemistry:** CHY 121, CHY 122, CHY 123, and CHY 124
3. **Organic Chemistry I:** CHY 251 and CHY 253; or BMB 221 and BMB 222
4. **Organic Chemistry II or Biochemistry:** CHY 252 and CHY 254; or BMB 322 and BMB 323

5. **Physics I:** PHY 111 or PHY 121
6. **Physics II:** PHY 112 or PHY 122
7. **Calculus:** MAT 116 or MAT 126 or MAT 136
8. **Statistics:** STS 132 or WLE 220 or PSY 241
9. **Biological Sciences Area Credits (see below):** minimum of 27 credits including 3 credits each from areas I, III, IV, and V, and 6 credits from area II. At least four lab courses (L) must be taken among the BIO Area courses, at least three plant courses (P), and at least 3 credits of capstone (C). A minimum of 12 of these credits must be taken at University of Maine. Students for whom this is a second major are not required to take a BIO capstone and need only take 24 credits within the Biological Sciences Areas.
10. **Required Course:** NFA 117
11. **Minimum average GPA 2.0 is required for all courses listed in items 1-9 above.**

Bachelor of Arts Core Requirements

1. **Basic Biology:** BIO 100 and BIO 200 (Minimum grade of C required in each.)
2. **General Chemistry:** CHY 121 and CHY 123, or BMB 207 and BMB 209
3. **Earth, Chemical, and Physical Systems:**

Choose 2 of the following courses, 6-8 cr

 - BMB 208 - Elementary Physiological Chemistry and BMB 210 - Elementary Physiological Chemistry Laboratory
 - BMB 221 - Organic Chemistry and BMB 222 - Laboratory in Organic Chemistry
 - BMB 322 - Biochemistry and BMB 323 - Biochemistry Laboratory
 - BMB 402 - Introduction to Bioinformatics
 - CHY 122 - General Chemistry II and CHY 124 - General Chemistry Laboratory II
 - CHY 251 - Organic Chemistry I and CHY 253 - Organic Chemistry Laboratory I
 - Any ERS course
 - Any PHY course 105 or higher
4. **Mathematics:**
 - STS 132 or WLE 220 or PSY 241, Statistics, 3 or 4 cr
 - One additional quantitative literacy course is necessary to complete Gen Ed requirements, 3 or 4 cr
 - Recommended courses:
 - MAT 116 - Introduction to Calculus
 - MAT 122 - Pre-Calculus
 - MAT 126 - Calculus I
 - COS 121 - Coding for Everyone
 - PHI 250 - Formal Logic
 - or any other course listed as filling Quant. Lit. Gen Ed.
5. **Biological Sciences Area Credits (see below):** minimum of 27 credits including 3 credits each from areas I, III, IV, and V, and 6 credits from area II. At least four lab courses (L) must be taken among the BIO Area courses, at least three plant courses (P), and at least 3 credits of capstone (C). A minimum of 12 of these credits must be taken at University of Maine. Students for whom this is a second major are not required to take a BIO capstone and need only take 24 credits within the Biological Sciences Areas.

6. **Required Course:** NFA 117

7. **Minimum average GPA 2.0 is required for all courses listed in items 1-6 above.**

8. **Satisfy General Education requirements.**

9. Complete the College of Natural Sciences, Forestry & Agriculture Graduation Requirements to obtain a Bachelor of Arts Degree which can be found here: [ELHS BA Graduation Requirements](#)

Ecology Concentration Requirements

1. Satisfy the core requirements of either the B.S. or B.A. degree program.
2. **Statistics requirement:** Take the following course to satisfy the requirement: WLE 220 Note for B.A. students, WLE 220 requires either MAT 116, MAT 122, or MAT 126 as a prerequisite.
3. **For BIO Area V:** Take the following courses: BIO 319 or SMS 300 and at least 3 additional credits chosen from BIO 205, BIO 309, BIO 326, BIO 411, BIO 429, BIO 455, BIO 463, BIO 468, BIO 476, EES 475, PSE 457, or WLE 423.
4. **Primary and Secondary Producers:** Choose at least one animal course from this list: BIO 326, BIO 329, BIO 353, BIO 411, BIO 429, or BIO 430
5. **Environmental Influences:** At least one of the following courses: EES 140, ERS 101, ERS 102, ERS 103, ERS 107, ERS 108, ERS 121, ERS 152, SFR 406 or SMS 108
6. **Field Experience:** At least one of the following courses: BIO 205, BIO 309, BIO 430, BIO 437, BIO 463, EES 475, WLE 201, or WLE 423. This course can also satisfy one of the BIO areas for the basic Botany major.
7. **General Education requirement:** To fill the general education capstone requirement (3 Biological Sciences credits labeled (C)), students in the Ecology Concentration must take one of the following: BIO 388, BIO 392, BIO 431, BIO 463 or HON 499.
8. **Writing Intensive:** ENG 201, ENG 315 or ENG 317. The requirement is satisfied for students who complete the Honors Civilization Sequence (HON 111, HON 112, HON 211, HON 212)

Entomology Concentration Requirements

1. Satisfy the core requirements of either the B.S. or the B.A. degree program.
2. **Biological Science AREAS 1-5:** Students may take any courses they want in any areas in accordance with degree requirements. However, to fill the requirements of the Entomology Concentration, course choices must include the following:
 - For BIO area 4: Take BIO 326
 - For BIO area 5: Take two of the following courses:
BIO 205, BIO 319, BIO 354, BIO 411, BIO 429, BIO 431, BIO 455, BIO 463, EES 140, PSE 457
 - **Insect specific courses:** Among the Biological Sciences Area courses, include at least **three** of the following courses, which can overlap with requirements listed above:
BIO 326, BIO 411, BIO 429, BIO 430
 - **Plant course:** Include at least **one** plant focused course (labeled "P"), which can overlap with requirements listed above, from this list:
BIO 310, BIO 429, BIO 432, BIO 452, BIO 464, PSE 457, SFR 439

3. **General Education requirement:** Students are strongly encouraged to complete their capstone requirement (3 Biological Sciences credits labeled (C)) through independent research, BIO 388 or HON 499

Biological Sciences Areas for the B.S. or B.A.

I. Cell and Molecular Biology

Students must take BMB 280 or BIO 480 or 6 total credits from the area.

- BIO 480 - Cell Biology **Credits: 3**
- BIO 483 - Cell Biology Laboratory **Credits: 2**
- BMB 280 - Introduction to Molecular and Cellular Biology **Credits: 3**
- BMB 300 - General Microbiology **Credits: 3**
- BMB 305 - General Microbiology Laboratory **Credits: 2**
- L - BIO 483, BMB 305
- C - BIO 480 & BIO 483 taken together

II. Genetics and Evolution

Both courses are required.

- BIO 350 - Concepts and Applications of Genetics **Credits: 3**
- BIO 365 - Fundamentals of Evolution **Credits: 3**

III. Physiology

BIO 452 is required. BIO 453 is optional, but is recommended and will count as one of the four required Biological Sciences Areas labs if taken.

- BIO 452 - Plant Physiology **Credits: 3**
- BIO 453 - Plant Physiology Laboratory **Credits: 1**
- L - BIO 453
- P - BIO 452

IV. Biodiversity

Students must take 3 credits from the area

- 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 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 464 - Taxonomy of Vascular Plants **Credits: 4**
- SFR 439 - Biology of Woody Plants **Credits: 3**

V. Ecology and Behavior

Students must take BIO 319 or 6 total credits from the area.

- BIO 205 - Field Natural History of Maine **Credits: 4**
- BIO 309 - Sustainability and Conservation Travel Study **Credits: 3**
- BIO 319 - General Ecology **Credits: 3**
- BIO 411 - Insect Ecology **Credits: 3**
- BIO 429 - Plant-Insect Interaction **Credits: 3**
- BIO 455 - Biological Invasions **Credits: 3**
- 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**
- PSE 457 - Plant Pathology **Credits: 4**
- WLE 423 - Wetland Ecology and Conservation **Credits: 4**
- L - BIO 205, BIO 309, BIO 463, BIO 476, EES 141, EES 475, PSE 457, WLE 423
- P - BIO 429, PSE 457
- C - BIO 463

Alternate Area

Courses within the Alternate Area can be included in the 27 total area minimum credits, but do not count toward any specific area except by prior arrangement with the program coordinator.

- 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**
- BMB 155 - Genome Discovery II: From DNA to Genes **Credits: 3**
or
- HON 155 - Genome Discovery II: From DNA to Genes **Credits: 3**
- * HON 498 - Honors Thesis/Research I **Credits: 3**
- * HON 499 - Honors Thesis/Research II **Credits: 3**
- BMB 400 - Molecular Genetics **Credits: 3**
- BMB 402 - Introduction to Bioinformatics **Credits: 3**
- L - BMB/HON 155
- C - BIO 388, BIO 392, BIO 402, HON 499

*Honors topic must be approved by Program Coordinator or Director

Required Courses in Suggested Sequence for the B.S. in Botany

First Year - First Semester

- BIO 100 - Basic Biology **Credits: 4**
- General Education Requirement or Elective **Credits: 3**
- ENG 101 - College Composition **Credits: 3**
- MAT 111 - Algebra for College Mathematics **Credits: 3**
or
- MAT 116 - Introduction to Calculus **Credits: 3**
- NFA 117 - First-Year Success Seminar **Credits: 1**
- Elective **Credits: 1**

First Year - Second Semester

- BIO 200 - Biology of Organisms **Credits: 4**
- BMB 280 - Introduction to Molecular and Cellular Biology **Credits: 3**
- MAT 116 - Introduction to Calculus **Credits: 3**
or
- Elective **Credit: 3**
- General Education Requirements **Credits: 3**
- Elective **Credit: 2**

Second Year - First Semester

- BIO 205 - Field Natural History of Maine **Credits: 4**
- BIO 350 - Concepts and Applications of Genetics **Credits: 3**
- BIO 464 - Taxonomy of Vascular Plants **Credits: 4**
- CHY 121 - General Chemistry I **Credits: 3**
with
- CHY 123 - General Chemistry Laboratory I **Credits: 1**

Second Year - Second Semester

- BIO 310 - Plant Biology **Credits: 4**
- BIO 365 - Fundamentals of Evolution **Credits: 3**
- CHY 122 - General Chemistry II **Credits: 3**
with
- CHY 124 - General Chemistry Laboratory II **Credits: 1**
- STS 132 - Principles of Statistical Inference **Credits: 3**
- Elective **Credit: 1**

Third Year - First Semester

- BMB 221 - Organic Chemistry **Credits: 3**
with

- BMB 222 - Laboratory in Organic Chemistry **Credits: 1**
- BIO 452 - Plant Physiology **Credits: 3**
with
- BIO 453 - Plant Physiology Laboratory **Credits: 1**
- BIO 463 - River Ecology **Credits: 4**
or
- BIO 342 - Plants in Our World **Credits: 3**
or
- General Education Requirement **Credits: 3**
- General Education Requirement **Credits: 3**
- Elective **Credits: 1**

Third Year - Second Semester

- BIO 319 - General Ecology **Credits: 3**
- BIO 429 - Plant-Insect Interaction **Credits: 3**
or
- BIO 476 - Paleoecology **Credits: 4**
- BMB 322 - Biochemistry **Credits: 3**
with
- BMB 323 - Biochemistry Laboratory **Credits: 2**
- General Education Requirement **Credits: 3**
- Elective **Credits: 1**

Fourth Year - First Semester

- PHY 111 - General Physics I **Credits: 4**
- PSE 457 - Plant Pathology **Credits: 4**
or
- General Education Requirement **Credits: 3**
- BIO 342 - Plants in Our World **Credits: 3**
or
- BIO 463 - River Ecology **Credits: 4**
- General Education Requirement **Credits: 3**
- Elective **Credits: 1**

Fourth Year - Second Semester

- BIO 429 - Plant-Insect Interaction **Credits: 3**
or
- BIO 476 - Paleoecology **Credits: 4**
- BIO 480 - Cell Biology **Credits: 3**
with
- BIO 483 - Cell Biology Laboratory **Credits: 2**
- PHY 112 - General Physics II **Credits: 4**
- General Education Requirement **Credits: 3**

Required Courses in Suggested Sequence for the B.S. in Botany With Honors, Chemistry taken in Second Year

Sequences may vary depending on student interests, transfer or AP credits, and beginning math level. The following is intended as an example of a 4-year sequence for this program and does not replace academic advising. Students and advisors should work together, carefully reviewing curriculum requirements, noting timing of courses and prerequisites, to design a program best suited to the individual student.

Students are encouraged to take 30 credits per academic year (fall, winter, spring, and summer combined) to achieve the 120 credit minimum for graduation.

Honors College

Students enrolled in the Honors College will find that the program works well with their major, replacing General Education and capstone requirements. Honors students should work with their advisor to adapt the suggested course sequences below to accommodate their Honors courses.

First Year - First Semester

- BIO 100 - Basic Biology **Credits: 4**
- HON 111 - Civilizations: Past, Present and Future I **Credits: 4**
- MAT 111 - Algebra for College Mathematics **Credits: 3**
or
- MAT 116 - Introduction to Calculus **Credits: 3**
- NFA 117 - First-Year Success Seminar **Credits: 1**
- Elective **Credits: 3**

First Year - Second Semester

- BIO 200 - Biology of Organisms **Credits: 4**
- BMB 280 - Introduction to Molecular and Cellular Biology **Credits: 3**
- MAT 116 - Introduction to Calculus **Credits: 3**
or
Elective **Credits: 3**
- HON 112 - Civilizations: Past, Present and Future II **Credits: 4**
- HON 170 - Currents and Context **Credits: 1**
- HON 180 - A Cultural Odyssey **Credits: 1**

Second Year - First Semester

- BIO 205 - Field Natural History of Maine **Credits: 4**
- BIO 350 - Concepts and Applications of Genetics **Credits: 3**
- CHY 121 - General Chemistry I **Credits: 3**
with
- CHY 123 - General Chemistry Laboratory I **Credits: 1**
- HON 211 - Civilizations: Past, Present and Future III **Credits: 4**
- HON 170 - Currents and Context **Credits: 1**
or

- HON 180 - A Cultural Odyssey **Credits: 1**

Second Year - Second Semester

- BIO 310 - Plant Biology **Credits: 4**
- BIO 365 - Fundamentals of Evolution **Credits: 3**
- CHY 122 - General Chemistry II **Credits: 3**
with
- CHY 124 - General Chemistry Laboratory II **Credits: 1**
- HON 212 - Civilizations: Past, Present and Future IV **Credits: 4**

Third Year - First Semester

- BIO 452 - Plant Physiology **Credits: 3**
with
- BIO 453 - Plant Physiology Laboratory **Credits: 1**
- BIO 342 - Plants in Our World **Credits: 3**
or
- BIO 463 - River Ecology **Credits: 4**
or
- General Education Requirement **Credits: 3**
- BMB 221 - Organic Chemistry **Credits: 3**
with
- BMB 222 - Laboratory in Organic Chemistry **Credits: 1**
- HON 310 - Honors Tutorial **Credits: 3**
- Elective **Credits: 0-1**

Third Year - Second Semester

- BIO 319 - General Ecology **Credits: 3**
- BIO 429 - Plant-Insect Interaction **Credits: 3**
or
- BIO 476 - Paleocology **Credits: 4**
- BMB 322 - Biochemistry **Credits: 3**
with
- BMB 323 - Biochemistry Laboratory **Credits: 2**
- HON 391 - Introduction to Thesis Research **Credits: 1**
- STS 132 - Principles of Statistical Inference **Credits: 3**

Fourth Year - First Semester

- BIO 342 - Plants in Our World **Credits: 3**
or
- BIO 463 - River Ecology **Credits: 4**
- BIO 464 - Taxonomy of Vascular Plants **Credits: 4**
- HON 498 - Honors Thesis/Research I **Credits: 3**
- PHY 111 - General Physics I **Credits: 4**

- Electives **Credits: 1**

Fourth Year- Second Semester

- BIO 429 - Plant-Insect Interaction **Credits: 3**
or
- BIO 476 - Paleocology **Credits: 4**
- HON 499 - Honors Thesis/Research II **Credits: 3**
- PHY 112 - General Physics II **Credits: 4**
- Elective **Credits: 5**

Required Courses in Suggested Sequence for the B.S. in Botany with Ecology Concentration

Sequences may vary depending on student interests, transfer or AP credits, and beginning math level. The following is intended as an example of a 4-year sequence for this program and does not replace academic advising. Students and advisors should work together, carefully reviewing curriculum requirements, noting timing of courses and prerequisites, to design a program best suited to the individual student.

Students are encouraged to take 30 credits per academic year (fall, winter, spring, and summer combined) to achieve the 120 credit minimum for graduation.

First Year - First Semester

- BIO 100 - Basic Biology **Credits: 4**
- ENG 101 - College Composition **Credits: 3**
- MAT 111 - Algebra for College Mathematics **Credits: 3**
or
- MAT 116 - Introduction to Calculus **Credits: 3**
- NFA 117 - First-Year Success Seminar **Credits: 1**
- General Education requirement or Elective **Credits: 3**
- Elective **Credits: 1**

First Year -Second Semester

- BIO 200 - Biology of Organisms **Credits: 4**
- BMB 280 - Introduction to Molecular and Cellular Biology **Credits: 3**
- MAT 116 - Introduction to Calculus **Credits: 3**
or
- Elective **Credits: 3**
- General Education requirement **Credits: 3**
- Elective **Credits: 2**

Second Year - First Semester

- BIO 205 - Field Natural History of Maine **Credits: 4**
- BIO 350 - Concepts and Applications of Genetics **Credits: 3**

- BIO 464 - Taxonomy of Vascular Plants **Credits: 4**
- CHY 121 - General Chemistry I **Credits: 3**
and
- CHY 123 - General Chemistry Laboratory I **Credits: 1**

Second Year - Second Semester

- BIO 310 - Plant Biology **Credits: 4**
- BIO 319 - General Ecology **Credits: 3**
- BIO 365 - Fundamentals of Evolution **Credits: 3**
- CHY 122 - General Chemistry II **Credits: 3**
with
- CHY 124 - General Chemistry Laboratory II **Credits: 1**
- Elective **Credits: 1**

Third Year - First Semester

- BIO 452 - Plant Physiology **Credits: 3**
with
- BIO 453 - Plant Physiology Laboratory **Credits: 1**
- BIO 342 - Plants in Our World **Credits: 3**
or
- BIO 432 - Biology of the Fungi **Credits: 4**
or
- BIO 463 - River Ecology **Credits: 4**
or
- General Education requirement **Credits: 4**
- BMB 221 - Organic Chemistry **Credits: 3**
with
- BMB 222 - Laboratory in Organic Chemistry **Credits: 1**
- ENG 317 - Business and Technical Writing **Credits: 3**
- Elective **Credits: 1**

Third Year - Second Semester

- BIO 429 - Plant-Insect Interaction **Credits: 3**
or
- BIO 431 - Emerging Infectious Diseases **Credits: 4**
or
- BIO 476 - Paleoeology **Credits: 4**
- BMB 322 - Biochemistry **Credits: 3**
with
- BMB 323 - Biochemistry Laboratory **Credits: 2**
- WLE 220 - Introduction to Ecological Statistics **Credits: 4**
- General Education requirement **Credits: 3**

Fourth Year - First Semester

- PHY 111 - General Physics I **Credits: 4**
- Animal course **Credits: 4**
- BIO 342 - Plants in Our World **Credits: 3**
or
- BIO 432 - Biology of the Fungi **Credits: 4**
or
- BIO 463 - River Ecology **Credits: 4**
or
- General Education requirement **Credits: 3**
- General Education requirement **Credits: 3**
- Elective **Credits: 1**

Fourth Year -Second Semester

- BIO 429 - Plant-Insect Interaction **Credits: 3**
or
- BIO 431 - Emerging Infectious Diseases **Credits: 4**
or
- BIO 476 - Paleoecology **Credits: 4**
- PHY 112 - General Physics II **Credits: 4**
- Environmental influences course **Credits: 3**
- General Education requirement **Credits: 5**

Required Courses in Suggested Sequence for the B.S. in Botany with Entomology Concentration

Sequences may vary depending on student interests, transfer or AP credits, and beginning math level. The following is intended as an example of a 4-year sequence for this program and does not replace academic advising. Students and advisors should work together, carefully reviewing curriculum requirements, noting timing of courses and prerequisites, to design a program best suited to the individual student.

Students are encouraged to take 30 credits per academic year (fall, winter, spring, and summer combined) to achieve the 120 credit minimum for graduation.

First Year - First Semester

- BIO 100 - Basic Biology **Credits: 4**
- ENG 101 - College Composition **Credits: 3**
- MAT 111 - Algebra for College Mathematics **Credits: 3**
or
- MAT 116 - Introduction to Calculus **Credits: 3**
- NFA 117 - First-Year Success Seminar **Credits: 1**
- General Education requirement or Elective **Credits: 3**
- Elective **Credits: 1**

First Year - Second Semester

- BIO 200 - Biology of Organisms **Credits: 4**
- BMB 280 - Introduction to Molecular and Cellular Biology **Credits: 3**
- MAT 116 - Introduction to Calculus **Credits: 3**
or
- Elective **Credits: 3**
- General Education requirement **Credits: 3**
- Elective **Credits: 2**

Second Year - First Semester

- BIO 205 - Field Natural History of Maine **Credits: 4**
- BIO 326 - General Entomology **Credits: 4**
- BIO 350 - Concepts and Applications of Genetics **Credits: 3**
- CHY 121 - General Chemistry I **Credits: 3**
with
- CHY 123 - General Chemistry Laboratory I **Credits: 1**

Second Year - Second Semester

- BIO 310 - Plant Biology **Credits: 4**
- BIO 365 - Fundamentals of Evolution **Credits: 3**
- CHY 122 - General Chemistry II **Credits: 3**
with
- CHY 124 - General Chemistry Laboratory II **Credits: 1**
- STS 132 - Principles of Statistical Inference **Credits: 3**
- Elective **Credits: 1**

Third Year - First Semester

- BIO 342 - Plants in Our World **Credits: 3**
or
- BIO 430 - Ecology and Systematics of Aquatic Insects **Credits: 4**
or
- BIO 432 - Biology of the Fungi **Credits: 4**
- BIO 464 - Taxonomy of Vascular Plants **Credits: 4**
- BMB 221 - Organic Chemistry **Credits: 3**
with
- BMB 222 - Laboratory in Organic Chemistry **Credits: 1**
- General Education requirement **Credits: 3**
- Elective **Credits: 1**

Third Year - Second Semester

- BIO 319 - General Ecology **Credits: 3**
- BIO 411 - Insect Ecology **Credits: 3**

- or
- BIO 429 - Plant-Insect Interaction **Credits: 3**
- or
- BIO 455 - Biological Invasions **Credits: 3**
- or
- BIO 476 - Paleoecology **Credits: 4**
- BMB 322 - Biochemistry **Credits: 3**
- with
- BMB 323 - Biochemistry Laboratory **Credits: 2**
- General Education requirement **Credits: 3**
- Elective **Credits: 1**

Fourth Year - First Semester

- BIO 342 - Plants in Our World **Credits: 3**
- or
- BIO 430 - Ecology and Systematics of Aquatic Insects **Credits: 4**
- or
- BIO 432 - Biology of the Fungi **Credits: 4**
- BIO 452 - Plant Physiology **Credits: 3**
- with
- BIO 453 - Plant Physiology Laboratory **Credits: 1**
- PHY 111 - General Physics I **Credits: 4**
- General Education requirement **Credits: 3**
- Elective **Credit: 0-1**

Fourth Year - Second Semester

- BIO 411 - Insect Ecology **Credits: 3**
- or
- BIO 429 - Plant-Insect Interaction **Credits: 3**
- or
- BIO 455 - Biological Invasions **Credits: 3**
- or
- BIO 476 - Paleoecology **Credits: 4**
- PHY 112 - General Physics II **Credits: 4**
- Capstone **Credits: 3**
- General Education requirement **Credits: 6**

Required Courses in Suggested Sequence for the B.A. in Botany

Sequences may vary depending on student interests, transfer or AP credits, and beginning math level. The following is intended as an example of a 4-year sequence for this program and does not replace academic advising. Students and advisors should work together, carefully reviewing curriculum requirements, noting timing of courses and prerequisites, to design a program best suited to the individual student.

Students are encouraged to take 30 credits per academic year (fall, winter, spring, and summer combined) to achieve the 120 credit minimum for graduation.

The BA sequence is intentionally flexible to allow students to pursue a minor or second major. The sequence here outlined is only one of many possibilities. Students are encouraged to work with their academic advisor to develop a customized sequence to meet their academic goals.

First Year - First Semester

- BIO 100 - Basic Biology **Credits: 4**
- ENG 101 - College Composition **Credits: 3**
- MAT 111 - Algebra for College Mathematics **Credits: 3**
- NFA 117 - First-Year Success Seminar **Credits: 1**
- General Education requirement **Credit: 3**

First Year - Second Semester

- BIO 200 - Biology of Organisms **Credits: 4**
- BMB 280 - Introduction to Molecular and Cellular Biology **Credits: 3**
- STS 132 - Principles of Statistical Inference **Credits: 3**
- General Education Requirement Credits: 6

Second Year - First Semester

- BIO 205 - Field Natural History of Maine **Credits: 4**
- BIO 350 - Concepts and Applications of Genetics **Credits: 3**
- BMB 207 - Fundamentals of Chemistry **Credits: 3**
- BMB 209 - Fundamentals of Chemistry Laboratory **Credits: 1**
- Course for minor **Credits: 3**

Second Year - Second Semester

- BIO 310 - Plant Biology **Credits: 4**
- BIO 319 - General Ecology **Credits: 3**
- BIO 365 - Fundamentals of Evolution **Credits: 3**
- Course for minor **Credits: 3**
- CHY or ERS or PHY **Credits: 3**

Third Year - First Semester

- BIO 326 - General Entomology **Credits: 4**
- BIO 342 - Plants in Our World **Credits: 3**
or
- BIO 432 - Biology of the Fungi **Credits: 4**
or
- PSE 457 - Plant Pathology **Credits: 4**
- BIO 464 - Taxonomy of Vascular Plants **Credits: 4**
- CHY or ERS or PHY **Credits: 3**
- Elective **Credits: 1**

Third Year - Second Semester

- BIO 411 - Insect Ecology **Credits: 3**
or
- BIO 455 - Biological Invasions **Credits: 3**
or
- General Education Requirement **Credits: 3**
- BIO 429 - Plant-Insect Interaction **Credits: 3**
or
- EES 140 - Soil Science **Credits: 3**
with
- EES 141 - Soil Science Laboratory **Credits: 1**
or
- Capstone
- Course for minor **Credits: 3**
- General Education Requirement **Credits: 6**

Fourth Year - First Semester

- BIO 342 - Plants in Our World **Credits: 3**
or
- BIO 432 - Biology of the Fungi **Credits: 4**
- BIO 452 - Plant Physiology **Credits: 3**
with
- BIO 453 - Plant Physiology Laboratory **Credits: 1**
- Course for minor **Credits: 6**
- Elective **Credits: 2**

Fourth Year - Second Semester

- BIO 429 - Plant-Insect Interaction **Credits: 3**
or
- EES 140 - Soil Science **Credits: 3**
with
- EES 141 - Soil Science Laboratory **Credits: 1**
or
- Capstone
- BIO 411 - Insect Ecology **Credits: 3**
or
- BIO 455 - Biological Invasions **Credits: 3**
or
- General Education Requirement **Credits: 3**
- Course for minor **Credits: 3**
- General Education Requirements **Credits: 6**

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 490

Contact Information: Patricia Poirier, Interim Chair, Office 243 Dunn Hall, Telephone (207) 581-3009, Email patricia.poirier@maine.edu

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 201 - Introduction to Clinical Audiology **Credits:** 3
- CSD 280 - Language Development **Credits:** 3
- CSD 283 - Anatomy and Physiology of the Speech Mechanism **Credits:** 3
- CSD 300 - Clinical Observation in Communication Sciences and Disorders **Credits:** 3
- CSD 382 - 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**

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 280 - 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 201 - Introduction to Clinical Audiology **Credits: 3**
- CSD 283 - Anatomy and Physiology of the Speech Mechanism **Credits: 3**
- STS 132 - 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: 3**
- 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

Fourth Year-First Semester

- CSD 382 - 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**

Earth and Climate Sciences

OVERVIEW OF DEGREE REQUIREMENTS - Earth and Climate 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 required courses and ERS electives.

Other GPA requirements to graduate: None.

Required Course(s) for fulfilling Capstone Experience: ERS 410 or ERS 499

Contact Information: Dr. Alice Doughty, Undergraduate Coordinator, 217 Bryand Global Sciences Center, 207-581-2159, alice.doughty@maine.edu

A major in Earth and Climate Sciences (ECS) allows students to explore the atmosphere, hydrosphere, geosphere, and cryosphere. Advances in remote sensing, geoenvironmental engineering, environmental studies, and related areas make ECS an important and fascinating field of study. Geology seeks to understand the Earth - from the Earth's interior and plate tectonics to climate change and surface processes. Earth scientists help find solutions to problems related to natural disasters and resources, become experts in understanding dynamic environmental systems, predict how different components of the Earth will change over time, and more. Core requirements include Earth systems, environmental change, geochemistry, geophysics, structural geology, mineralogy, sedimentology and stratigraphy, and geomorphology. ECS majors are exposed to a variety of research opportunities inside and outside the classroom.

B.A. or B.S. Earth and Climate Sciences graduates from this program pursue various careers, depending on their interest, level of educational attainment, and subsequent professional education. Among the more typical career areas are geologic industry and mining, 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.

The many choices for Earth (ERS) electives allows majors to tailor their programs to their interests. Students can choose from a wide range of courses covering all major areas of geology including geohazards, marine geology, petrology, fresh-water flow, glaciology, extreme weather, glacial geology, hydrology, and paleoceanography. Students enrolled in the Honors College will find the program complementary to their degree studies. Each student works with an academic advisor to develop a curriculum that best meets the student's goals and allows for exploration or specialization as desired. Students are strongly encouraged to become laboratory, field, and research assistants for projects led by faculty, staff, and graduate students in the program. Students wishing to spend a semester studying abroad are advised to discuss this option with their advisor early in their program.

The School of Earth and Climate Sciences offers a B.A. degree in Earth and Climate Sciences and a B.S. degree in Earth and Climate Sciences with an Earth Sciences or Climate Sciences concentration. We also offer an Earth, Environmental, and Climate Sciences Concentration through the B.S. in the Ecology and Environmental Sciences program. For information about the program, faculty, staff, and facilities, visit <https://umaine.edu/earthclimate/>.

Bachelor of Arts in Earth and Climate Sciences

Minimum number of credits required to graduate: 120

Minimum Cumulative GPA required to graduate: 2.0

To earn a B.A. in the School of Earth and Climate Sciences, you must complete the following courses, in addition to the University-wide General Education and graduation requirements. The College of Earth, Life and Health Sciences also

requires all students to complete NFA 117, usually in their first year in the School. Aside from the Gen Ed requirements, only courses for which you earn a C- or higher count toward the major.

B.A. students are also required to complete ERS 316, and 12 credits of ERS courses at the 200 level or above. University regulations stipulate that B.A. students must complete 72 credits outside the School of Earth and Climate Sciences (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). 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.

Introductory courses: (pick at least one of the following:)

- ERS 101 - Introduction to Earth Science **Credits: 4**
or
- ERS 102 - Environmental Geology **Credits: 4**
or
- ERS 103 - Dynamic Earth **Credits: 3**
or
- ERS 107 - Energy, Environment, & Climate **Credits: 3**
or
- ERS 108 - Beaches and Coasts **Credits: 3**
or
- ERS 121 - Humans and Global Change **Credits: 3**
or
- ERS 152 - Earth's Changing Climate **Credits: 3**

Core courses: (all are required)

- ERS 200 - Earth Systems **Credits: 4**
- ERS 201 - Global Environmental Change **Credits: 4**
- ERS 312 - Geochemistry **Credits: 4**
- ERS 315 - Principles of Sedimentology and Stratigraphy **Credits: 4**
- ERS 316 - Structural Geology **Credits: 4**
- ERS 317 - Introduction to Geophysics **Credits: 4**
- ERS 320 - Research Seminar in Earth and Climate Sciences **Credits: 1**
- ERS 330 - Earth Materials **Credits: 4**
- ERS 361 - The Principles of Geomorphology **Credits: 3**
- NFA 117 - First-Year Success Seminar **Credits: 1**

Capstone courses: (pick one of the capstone options)

- ERS 410 - Sea-to-Sky Experience **Credits: 3**
or
- ERS 499 - Field Experience in Earth and Climate Sciences **Credits: 4-6**

Ancillary courses: (all are required)

- CHY 121 - General Chemistry I **Credits: 3**
and

- CHY 123 - General Chemistry Laboratory I **Credits: 1**
- MAT 116 - Introduction to Calculus **Credits: 3**
or
- 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**
- STS 132 - Principles of Statistical Inference **Credits: 3**

Required Courses in Suggested Sequence for B.A. in Earth and Climate Sciences (15 Credits/Semester)

Suggested Curriculum for a B.A. in Earth and Climate Sciences. Note that many upper division ERS courses are offered only in alternate years.

First Year - Fall Semester

- ENG 101 - College Composition **Credits: 3**
- ERS 101 - Introduction to Earth Science **Credits: 4**
or
- ERS 102 - Environmental Geology **Credits: 4**
- NFA 117 - First-Year Success Seminar **Credits: 1**
- General Education Requirement Credits: 7

First Year - Spring Semester

- MAT 126 - Calculus I **Credits: 4**
- General Education Requirement Credits: 11

Second Year - Fall Semester

- ERS 200 - Earth Systems **Credits: 4**
- ERS 301 - Earth and Climate Science Geomatics **Credits: 4**
OR
- General Education Requirement Credits: 3-4
- CHY 121 - General Chemistry I **Credits: 3**
AND
- CHY 123 - General Chemistry Laboratory I **Credits: 1**
- STS 132 - Principles of Statistical Inference **Credits: 3**

Second Year - Spring Semester

- ERS 201 - Global Environmental Change **Credits: 4**
- ERS 330 - Earth Materials **Credits: 4**
- Electives (may include ERS Electives) Credits: 7
OR

- General Education Requirements Credits: 7

Third Year - Fall Semester

- ERS 320 - Research Seminar in Earth and Climate Sciences **Credits: 1**
- ERS 316 - Structural Geology **Credits: 4**
OR
- ERS 361 - The Principles of Geomorphology **Credits: 3**
- PHY 111 - General Physics I **Credits: 4**
OR
- PHY 121 - Physics for Engineers and Physical Scientists I **Credits: 4**
- General Education Requirement (if necessary) Credits: 7
OR
- ERS Electives Credits: 7

Third Year - Spring Semester

- ERS 312 - Geochemistry **Credits: 4**
OR
- ERS 315 - Principles of Sedimentology and Stratigraphy **Credits: 4**
- ERS 317 - Introduction to Geophysics **Credits: 4**
- Electives (may include ERS Electives) Credits: 7-11

Third Year (or Fourth Year) - Summer

- ERS 410 - Sea-to-Sky Experience **Credits: 3**
OR
- ERS 499 - Field Experience in Earth and Climate Sciences **Credits: 4-6**

Fourth Year - Fall Semester

- ERS 316 - Structural Geology **Credits: 4**
OR
- ERS 361 - The Principles of Geomorphology **Credits: 3**
- Electives (may include ERS Electives) - Credits: 11-12

Fourth Year - Spring Semester

- ERS 312 - Geochemistry **Credits: 4**
OR
- ERS 315 - Principles of Sedimentology and Stratigraphy **Credits: 4**
- ERS 317 - Introduction to Geophysics **Credits: 4**
- Electives (may include ERS Electives) Credits: 7-11
OR
- General Education Requirement (if necessary) Credits: 7-11

Bachelor of Science in Earth and Climate Sciences

Minimum number of credits to graduate: 120

Minimum Cumulative GPA required to graduate: 2.0

To earn a B.S. in the School of Earth and Climate Sciences, you must complete the requirements of the core courses, including those in the supporting sciences, and those of one of the two concentrations (Earth Sciences or Climate Sciences), in addition to the University-wide requirements. The College of Earth, Life and Health Sciences also requires all students to complete NFA 117, usually in their first year in the School. Only courses for which you earn a C- or higher count toward the major.

Introductory courses: (pick at least one of the following)

- ERS 101 - Introduction to Earth Science **Credits: 4**
or
- ERS 102 - Environmental Geology **Credits: 4**
or
- ERS 103 - Dynamic Earth **Credits: 3**
or
- ERS 107 - Energy, Environment, & Climate **Credits: 3**
or
- ERS 108 - Beaches and Coasts **Credits: 3**
or
- ERS 121 - Humans and Global Change **Credits: 3**
or
- ERS 152 - Earth's Changing Climate **Credits: 3**

Core courses: (all are required)

- ERS 200 - Earth Systems **Credits: 4**
- ERS 201 - Global Environmental Change **Credits: 4**
- ERS 312 - Geochemistry **Credits: 4**
- ERS 315 - Principles of Sedimentology and Stratigraphy **Credits: 4**
- ERS 317 - Introduction to Geophysics **Credits: 4**
- ERS 320 - Research Seminar in Earth and Climate Sciences **Credits: 1**
- ERS 330 - Earth Materials **Credits: 4**
- ERS 361 - The Principles of Geomorphology **Credits: 3**
- NFA 117 - First-Year Success Seminar **Credits: 1**

Capstone courses: (pick one of the capstone options)

- ERS 410 - Sea-to-Sky Experience **Credits: 3**
OR
- ERS 499 - Field Experience in Earth and Climate Sciences **Credits: 4-6**

Computational Courses: (pick one of the following)

- COS 125 - Introduction to Problem Solving Using Computer Programming **Credits: 4**
OR
- ERS 301 - Earth and Climate Science Geomatics **Credits: 4**
OR
- ERS 350 - Fresh-Water Flow **Credits: 3**
OR
- ERS 420 - Computer Scripting for Data Analysis **Credits: 3**

Ancillary courses: (all are required)

- CHY 121 - General Chemistry I **Credits: 3**
- CHY 123 - General Chemistry Laboratory I **Credits: 1**
- CHY 122 - General Chemistry II **Credits: 3**
- CHY 124 - General Chemistry Laboratory II **Credits: 1**
- MAT 116 - Introduction to Calculus **Credits: 3**
OR
- MAT 126 - Calculus I **Credits: 4**
- MAT 117 - Applications of Calculus **Credits: 3**
OR
- MAT 127 - Calculus II **Credits: 4**
- STS 132 - Principles of Statistical Inference **Credits: 3**
- PHY 111 - General Physics I **Credits: 4**
OR
- PHY 121 - Physics for Engineers and Physical Scientists I **Credits: 4**
- PHY 112 - General Physics II **Credits: 4**
OR
- PHY 122 - Physics for Engineers and Physical Scientists II **Credits: 4**

Climate Science Concentration

B.S. students with a Climate Sciences Concentration are also required to complete ERS 121 or ERS 152, SMS 100 or 110, ERS 240 and 12 credits of electives from the list below. If an ERS course is used for the computational course, it may not also be used to satisfy the ERS elective requirement. The requirements leave sufficient opportunity for students to complete a minor in another field.

All are required

- ERS 121 - Humans and Global Change **Credits: 3**
or
- ERS 152 - Earth's Changing Climate **Credits: 3**
- ERS 240 - The Atmosphere **Credits: 4**
- SMS 100 - Introduction to Ocean Science **Credits: 3**
or
- SMS 110 - Concepts in Oceanography **Credits: 3**

Electives: (12 credits from the following list)

- ECO 381 - SL: Sustainability Science, Policy, and Action **Credits: 3**

- EES 324 - Environmental Protection Law and Policy **Credits: 3**
- EES 398 - Special Seminar In Ecology and Environmental Science **Credits: 1-3**
- EES 598 - Special Seminar in Ecology and Environmental Sciences **Credits: 1-3**
- ERS 323 - Extreme Weather **Credits: 3**
- ERS 350 - Fresh-Water Flow **Credits: 3**
- ERS 401 - Paleoceanography **Credits: 3**
- ERS 410 - Sea-to-Sky Experience **Credits: 3**
- ERS 420 - Computer Scripting for Data Analysis **Credits: 3**
- ERS 425 - How to Build a Habitable Planet **Credits: 3**
- ERS 441 - Glaciers and Our Landscape **Credits: 3**
- ERS 444 - Introduction to Glaciology **Credits: 4**
- ERS 460 - Marine Geology **Credits: 3.0**
- ERS 480 - Introduction to Hydrogeology **Credits: 3**
- ERS 498 - Undergraduate Thesis **Credits: 3**
- ERS 542 Atmospheres, Oceans, Ice, Climate Change **Credits: 3**
- SMS 230 - Introduction to Marine Policy and Fisheries Management **Credits: 3**

Earth Science Concentration

B.S. students with an Earth Sciences Concentration are also required to complete ERS 316, and 12 credits of ERS courses at the 200 level or above (listed below). If an ERS course is used for the computational course, it may not also be used to satisfy the ERS elective requirement. The requirements leave sufficient opportunity for students to complete a minor in another field.

Required

- ERS 316 - Structural Geology **Credits: 4**

ERS Electives: (12 credits from the following list)

- ERS 240 - The Atmosphere **Credits: 4**
- ERS 301 - Earth and Climate Science Geomatics **Credits: 4**
- ERS 319 - Geohazards and Humans **Credits: 3**
- ERS 323 - Extreme Weather **Credits: 3**
- ERS 340 - Economic Geology **Credits: 3**
- ERS 350 - Fresh-Water Flow **Credits: 3**
- ERS 401 - Paleoceanography **Credits: 3**
- ERS 420 - Computer Scripting for Data Analysis **Credits: 3**
- ERS 425 - How to Build a Habitable Planet **Credits: 3**
- ERS 433 - Igneous and Metamorphic Petrology **Credits: 4**
- ERS 441 - Glaciers and Our Landscape **Credits: 3**
- ERS 444 - Introduction to Glaciology **Credits: 4**
- ERS 451 - Tectonics **Credits: 3**
- ERS 460 - Marine Geology **Credits: 3.0**
- ERS 480 - Introduction to Hydrogeology **Credits: 3**

Required Courses in Suggested Sequence for B.S. in Earth and Climate Sciences, with an Earth Sciences Concentration (15 Credits/Semester)

Suggested Curriculum for a B.S. in Earth and Climate Sciences, with an Earth Sciences Concentration starting in fall of an odd year (e.g., 2023). Note that many upper division ERS courses are offered only in alternate years.

First Year - Fall Semester

- ENG 101 - College Composition **Credits: 3**
- ERS 101 - Introduction to Earth Science **Credits: 4**
OR
- ERS 102 - Environmental Geology **Credits: 4**
- MAT course as prereq to MAT 116 or 126
OR
- MAT 126 - Calculus I **Credits: 4**
- NFA 117 - First-Year Success Seminar **Credits: 1**
- General Education Requirement Credits:3

First Year - Spring Semester

- MAT 116 - Introduction to Calculus **Credits: 3**
OR
- MAT 127 - Calculus II **Credits: 4**
- General Education Requirement (if necessary) Credits: 11

Second Year - Fall Semester

- ERS 200 - Earth Systems **Credits: 4**
- ERS 301 - Earth and Climate Science Geomatics **Credits: 4**
OR
- General Education Requirement Credits: 3-4
- CHY 121 - General Chemistry I **Credits: 3**
AND
- CHY 123 - General Chemistry Laboratory I **Credits: 1**
- STS 132 - Principles of Statistical Inference **Credits: 3**

Second Year - Spring Semester

- CHY 122 - General Chemistry II **Credits: 3**
AND
- CHY 124 - General Chemistry Laboratory II **Credits: 1**
- ERS 201 - Global Environmental Change **Credits: 4**
- ERS 312 - Geochemistry **Credits: 4**
- Electives (may include ERS Electives) Credits: 7
OR
- General Education Requirements Credits: 7

Third Year - Fall Semester

- ERS 316 - Structural Geology **Credits: 4**
- ERS 320 - Research Seminar in Earth and Climate Sciences **Credits: 1**
- ERS 361 - The Principles of Geomorphology **Credits: 3**
- PHY 111 - General Physics I **Credits: 4**
OR
- PHY 121 - Physics for Engineers and Physical Scientists I **Credits: 4**
- General Education Requirement (if necessary) Credits: 3
OR
- ERS Electives Credits: 3

Third Year - Spring Semester

- ERS 315 - Principles of Sedimentology and Stratigraphy **Credits: 4**
- ERS 317 - Introduction to Geophysics **Credits: 4**
- ERS 330 - Earth Materials **Credits: 4**
- PHY 112 - General Physics II **Credits: 4**
OR
- PHY 122 - Physics for Engineers and Physical Scientists II **Credits: 4**

Third Year (or Fourth Year) - Summer

- ERS 410 - Sea-to-Sky Experience **Credits: 3**
or
- ERS 499 - Field Experience in Earth and Climate Sciences **Credits: 4-6**

Fourth Year - Fall Semester

- Electives (may include ERS Electives) - Credits: 12-15
- General Education Requirement (if necessary) - Credits: 3

Fourth Year - Spring Semester

- Electives (may include ERS Electives) Credits: 12-15
- General Education Requirement (if necessary) Credits: 3

Required Courses in Suggested Sequence for B.S. in Earth and Climate Sciences, with an Climate Sciences Concentration (15 Credits/Semester)

Suggested Curriculum for a B.S. in Earth and Climate Sciences, with an Climate Sciences Concentration starting in fall of an even year (e.g., 2024). Note that many upper division ERS courses are offered only in alternate years.

First Year - Fall Semester

- ENG 101 - College Composition **Credits: 3**
- ERS 101 - Introduction to Earth Science **Credits: 4**
OR
- ERS 102 - Environmental Geology **Credits: 4**
- ERS 121 - Humans and Global Change **Credits: 3**
OR
- ERS 152 - Earth's Changing Climate **Credits: 3**
- MAT course as prereq to MAT 116 or 126
OR
- MAT 126 - Calculus I **Credits: 4**
- NFA 117 - First-Year Success Seminar **Credits: 1**

First Year - Spring Semester

- ERS 240 - The Atmosphere **Credits: 4**
- MAT 116 - Introduction to Calculus **Credits: 3**
OR
- MAT 127 - Calculus II **Credits: 4**
- Electives (may include ERS Electives) **Credits: 7**
OR
- General Education Requirement (if necessary) **Credits: 7**

Second Year - Fall Semester

- ERS 200 - Earth Systems **Credits: 4**
- ERS 301 - Earth and Climate Science Geomatics **Credits: 4**
OR
- General Education Requirement **Credits: 3-4**
- CHY 121 - General Chemistry I **Credits: 3**
AND
- CHY 123 - General Chemistry Laboratory I **Credits: 1**
- STS 132 - Principles of Statistical Inference **Credits: 3**

Second Year - Spring Semester

- ERS 201 - Global Environmental Change **Credits: 4**
- ERS 330 - Earth Materials **Credits: 4**
- CHY 122 - General Chemistry II **Credits: 3**
AND
- CHY 124 - General Chemistry Laboratory II **Credits: 1**
- Electives (may include ERS Electives) **Credits: 7**
OR
- General Education Requirement (if necessary) **Credits: 7**

Third Year - Fall Semester

- ERS 320 - Research Seminar in Earth and Climate Sciences **Credits: 1**

- PHY 111 - General Physics I **Credits: 4**
OR
- PHY 121 - Physics for Engineers and Physical Scientists I **Credits: 4**
- SMS 100 - Introduction to Ocean Science **Credits: 3**
- Electives (may include ERS Electives) Credits: 7
OR
- General Education Requirement (if necessary) Credits: 7

Third Year - Spring Semester

- ERS 312 - Geochemistry **Credits: 4**
- PHY 112 - General Physics II **Credits: 4**
OR
- PHY 122 - Physics for Engineers and Physical Scientists II **Credits: 4**
- Electives (may include ERS Electives) Credits: 7
OR
- General Education Requirement (if necessary) Credits: 7

Third Year (or Fourth Year) - Summer

- ERS 410 - Sea-to-Sky Experience **Credits: 3**
OR
- ERS 499 - Field Experience in Earth and Climate Sciences **Credits: 4-6**

Fourth Year - Fall Semester

- ERS 316 - Structural Geology **Credits: 4**
- ERS 361 - The Principles of Geomorphology **Credits: 3**
- Electives (may include ERS Electives) Credits: 8
OR
- General Education Requirement (if necessary) Credits: 8

Fourth Year - Spring Semester

- ERS 315 - Principles of Sedimentology and Stratigraphy **Credits: 4**
- ERS 317 - Introduction to Geophysics **Credits: 4**
- Electives (may include ERS Electives) Credits: 7
OR
- General Education Requirement (if necessary) Credits: 7

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: Dr. Kate Ruskin, Program Coordinator, 111 Bryand Global Sciences Center, (207) 581-3177, ees@maine.edu

Transfer Policy: Currently enrolled students who wish to change their major to EES must first meet with the Undergraduate Program Coordinator and demonstrate success in a 100 level Math and/or Science course.

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 Courses;

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 489 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 - Field Research Experience in Ecology and Environmental Sciences **Credits: 0-2**
- EES 489 - Critical Issues in Ecology and Environmental Sciences **Credits: 4** (must be taken senior year)
- EES 390 - Junior Seminar **Credits: 3**

- PHI 232 - Environmental Ethics **Credits: 3**
Or
- ECO 381 - SL: Sustainability Science, Policy, and Action **Credits: 3**

2. Biological and Ecological Sciences (7 credits)

- BIO 100 - Basic Biology **Credits: 4**
- Note: Some concentrations require BIO 200, and BIO 200 is required as a prerequisite for many upper level science electives, including BIO 319. Please see concentration requirements. Admission into BIO 200 requires a C- or better in BIO 100.

- WLE 200 - Ecology **Credits: 3**
Or
- SMS 300 - Marine Ecology **Credits: 3**
See Footnote 1
Or
- BIO 319 - General Ecology **Credits: 3**

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 - General Chemistry I **Credits: 3**
And

- CHY 123 - General Chemistry Laboratory I **Credits: 1**
- CHY 122 - General Chemistry II **Credits: 3**
And
- CHY 124 - General Chemistry Laboratory II **Credits: 1**
or
- PHY 111 - General Physics I **Credits: 4**
- ERS 101 - Introduction to Earth Science **Credits: 4**
Or
- ERS 102 - Environmental Geology **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 132 - 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 301 - 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 315 - Research Writing in the Disciplines **Credits: 3**
Or
- ENG 317 - Business and Technical Writing **Credits: 3**
- CMJ 103 - Public Speaking **Credits: 3**
Or
- CMJ 107 - Communication and the Environment **Credits: 3**
Or

- 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. The Population and the Environment sub-category is met within the EES core requirements. Each student must complete courses in the remaining sub-categories (below) from an approved list. Depending on course choices, some sub-categories may also be met within the EES requirements (Social Context and Institutions, Western Cultural Traditions, Cultural Diversity and International Perspectives). The Artistic and Creative Expression sub-category is never covered by EES requirements, so students must satisfy this requirement via an additional elective.

- * 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 at least 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:

¹ Students in the Ecosystems Ecology Marine Ecosystems option must take SMS 300

² Only students in the Ecosystems Ecology Forest Ecosystems option take SFR 446

³ Only students in Ecosystems Ecology Marine Ecosystems option take SMS 230

⁴ Students in the Ecosystems Ecology Forest Ecosystems option take SFR 220

⁵ Only students in Ecosystems Ecology Marine Ecosystems option take ERS108

⁶ Only students in Ecosystems Ecology Marine Ecosystems option take SMS 108

⁷ Only students in the Ecosystem Ecology Forest Ecosystems option take SFR 205

⁸ Students in the Ecosystem Ecology Forest Ecosystems option must take SFR 400

ENVIRONMENTAL EARTH AND CLIMATE SCIENCES CONCENTRATION

The intent of the Environmental Earth and Climate Sciences concentration is to provide flexibility to pursue courses related to the environmental earth and climate sciences that meet individual student interests. When selecting courses that fulfill these electives, please consider personal objectives and select courses that will further your individual goals (Where do you hope to work? Do you plan on attending graduate school?). Students interested in employment opportunities in different fields are advised to discuss course selections with faculty in those fields. Students must earn a C or higher in concentration courses.

Required Courses (11 credits)

- ERS 152 - Earth's Changing Climate **Credits: 3**
- ERS 201 - Global Environmental Change **Credits: 4**
- MAT 116 - Introduction to Calculus **Credits: 3**
or
- MAT 122 - Pre-Calculus **Credits: 4**
or
- MAT 126 - Calculus I **Credits: 4**

Concentration Electives (Must take 21 total credits, 15 of which are 300-400 level classes.)

- Selected from the following disciplines: ERS, PSE, WLE, BIO, SMS, SFR, EES, ANT, MAT, PHY, CHY
- At least 12 of these elective credits must be ERS courses.
- At least 3 of these elective credits must be taken outside of ERS.
- Required core and concentration courses may not be used to also fulfill concentration elective courses.
- Concentration electives must be at the 200 level or higher with the exception of MAT 126/127, PHY 111/112/121/122, and CHY 121/123/122/124. At least 15 of these 21 course credits must be filled by courses at the 300 or higher level.
- Students interested in environmental geology careers are strongly encouraged to complete courses in hydrology (e.g. ERS 350, ERS 480), geochemistry (e.g. ERS 312, ERS 521), and surficial processes (e.g. ERS 361, ERS 441). Students interested in pursuing post-graduate studies are advised to take a full year of calculus, chemistry, and/or physics (depending on their career goals).

Sample tracks within this concentration:

Environmental Earth Science

ERS 312 - Geochemistry Credit: 4

ERS 315 - Principles of Sedimentology and Stratigraphy Credit: 4

ERS 319 - Geohazards and Humans Credit: 3

ERS 330 - Earth Materials Credit: 4

ERS 350 - Fresh-Water Flow Credit: 3

ERS 361 - The Principles of Geomorphology Credit: 3

ERS 401 - Paleoceanography Credit: 3

ERS 420 - Computer Scripting for Data Analysis Credit: 3

PSE 469 - Soil Microbiology Credit: 3

WLE 423 - Wetland Ecology and Conservation Credit: 4

Climate Science

ANT 311 - Geography of Climate Change Credit: 3

BIO 476 - Paleoecology Credit: 4

EES 312 - Energy, Law & Environment: Contending with Climate Change Credit: 3

ERS 240 - The Atmosphere Credit: 4

ERS 312 - Geochemistry Credit: 4

ERS 315 - Principles of Sedimentology and Stratigraphy Credit: 4

ERS 323 - Extreme Weather Credit: 3

ERS 330 - Earth Materials Credit: 4

ERS 401 - Paleooceanography Credit: 3

ERS 420 - Computer Scripting for Data Analysis Credit: 3

ERS 425 - How to Build a Habitable Planet Credit: 3

ERS 441 - Glaciers and Our Landscape Credit: 3

ERS 444 - Introduction to Glaciology Credit: 4

SMS 402 - Oceans and Climate Change Credit: 3

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 (11-12 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 116 - Introduction to Calculus **Credits: 3**
or
- MAT 122 - Pre-Calculus **Credits: 4**
or
- MAT 126 - Calculus I **Credits: 4**

Concentration Electives (20-24 credits, 15 of which must be 300-400 level courses)

Ecosystems (8-11 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 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 - The Arctic Ocean: A Question-based Approach to Learning Marine Sciences **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: 3**
- SMS 308 - Conservation and Ecology of Marine Mammals **Credits: 3**
- PSE 403 - Weed Ecology and Management **Credits: 3**
- SFR 439 - Biology of Woody Plants **Credits: 3**

- SFR 522 - Physiological Ecology of Plants Credits: 3 (See Graduate Catalog for description)
 - SMS 322 - Biology of Marine Vertebrates **Credits: 3**
 - SMS 422 - Biology of Fishes **Credits: 3**
 - SMS 480 - Semester-by-the-Sea: Biology of Marine Invertebrates **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 365 - Fundamentals of 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**
 - PSE 440 - Environmental Soil Chemistry and Plant Nutrition **Credits: 3**
 - PSE 457 - Plant Pathology **Credits: 4**
 - PSE 469 - Soil Microbiology **Credits: 3**
 - SFR 107 - Forest Vegetation **Credits: 3**
 - SFR 406 - Remote Sensing of the Forest Environment **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 439 - Biology of Woody Plants **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 491 - Problems in Marine Science **Credits: Ar**
- SMS 497 - Independent Study in Marine Science **Credits: 1-4**
- WLE 323 - Introduction to Conservation Biology **Credits: 3**

Footnotes:

^{1A} Only students in Ecosystems Marine Ecosystems Option take SMS 201/203

^{2A} Students following the Forest Ecosystems option must take SFR 407, 408, and 409 to fulfill their Ecosystems requirement.

^{3A} Students following the Wetland and Aquatic Sciences option must take BIO 463, Bio 468, and WLE 423 to fulfill their Ecosystems requirement.

^{4A} 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 (22-24 credits)

- MAT 116 - Introduction to Calculus **Credits: 3**
or
- 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**

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 410 - Human Dimensions of Climate Change **Credits: 3**
- ANT 431 - Folklore, the Environment and Public Policy **Credits: 3**
- ANT 464 - Ecological Anthropology **Credits: 3**
- ECO 477 - Natural Resource Economics and Policy **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**
- MES 301 - Rachel Carson, Maine, and the Environment **Credits: 3**

- SFR 452 - Environmental Interpretation **Credits: 4**
- SFR 479 - Environmental Attitudes and Behaviors **Credits: 3**
- WGS 230 - Women, Health, and the Environment **Credits: 3**
(Pre-requisite of WGS 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 (11-12 credits)

- MAT 116 - Introduction to Calculus **Credits: 3**
or
- 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: 4**
- ERS 315 - Principles of Sedimentology and Stratigraphy **Credits: 4**
- ERS 330 - Earth Materials **Credits: 4**
- PSE 440 - Environmental Soil Chemistry and Plant Nutrition **Credits: 3**
- PSE 469 - Soil Microbiology **Credits: 3**

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.

- ERS 200 - Earth Systems **Credits: 4**
- ERS 201 - Global Environmental Change **Credits: 4**
- ERS 420 - Computer Scripting for Data Analysis **Credits: 3**
- ERS 441 - Glaciers and Our Landscape **Credits: 3**
- SFR 208 - Geomatics, Coordinate Geometry, and GPS **Credits: 4**
- SFR 406 - Remote Sensing of the Forest Environment **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 - SL: Sustainability Science, Policy, and Action **Credits: 3**
See footnote 1B
- POS 100 - American Government **Credits: 3**
- POS 120 - Introduction to World Politics **Credits: 3**

Required Courses (9-10 credits)

- MAT 116 - Introduction to Calculus **Credits: 3**
or
- MAT 122 - Pre-Calculus **Credits: 4**
or
- MAT 126 - Calculus I **Credits: 4**
- ECO 120 - Principles of Microeconomics **Credits: 3**
- ECO 377 - Environmental Economics and Policy **Credits: 3**
or
- ECO 477 - Natural Resource Economics and Policy **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 - SL: Sustainable Energy Economics & Policy **Credits: 3**
- ECO 450 - International Environmental Economics and Policy **Credits: 3**
- ECO 471 - Public Finance and Fiscal Policy **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 410 - Human Dimensions of Climate Change **Credits: 3**
 - ANT 464 - Ecological Anthropology **Credits: 3**
 - ECO 381 - SL: Sustainability Science, Policy, and Action **Credits: 3**
 - SFR 220 - Environment and Society **Credits: 3**
 - SFR 479 - Environmental Attitudes and Behaviors **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: 3**
- 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**
- 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 312 - Sustainable Food Systems: Challenges and Opportunities **Credits: 3**
- PSE 403 - Weed Ecology and Management **Credits: 3**
- SFR 208 - Geomatics, Coordinate Geometry, and GPS **Credits: 4**
- SFR 215 - Introduction to Sustainable Materials and Technology **Credits: 3**
- SFR 226 - Park Systems of the World **Credits: 3**
- SFR 349 - Applied Forest Ecology and Silviculture **Credits: 4**
- SFR 406 - Remote Sensing of the Forest Environment **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 461 - Human Dimensions of Fisheries and Wildlife Conservation **Credits: 3**
- WLE 470 - Wildlife Policy and Administration **Credits: 3**

Footnotes:

^{1B} 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.

^{2B} Prerequisite for WGS 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.

Students are encouraged to take at least 15 credits each semester.

First Year - First Semester

- BIO 100 - Basic Biology **Credits: 4**
- ENG 101 - College Composition **Credits: 3**
- EES 117 - Introduction to Ecology and Environmental Sciences **Credits: 2**

- ERS 101 - Introduction to Earth Science **Credits: 4**
- Or**
- ERS 102 - Environmental Geology **Credits: 4**
- Gen Ed (optional)

First Year - Second Semester

- 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**
- MAT 122 - Pre-Calculus **Credits: 4**
- **Or**
- MAT 126 - Calculus I **Credits: 4**
- SFR 222 - Environmental Communication Skills **Credits: 3**
- or
- CMJ 107 - Communication and the Environment **Credits: 3**
- or
- CMJ 103 - Public Speaking **Credits: 3**
- Gen Ed or Required Concentration Course Credits: 3

Second Year - First Semester

- EES 217 - Field Research Experience in Ecology and Environmental Sciences **Credits: 0-2**
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 220 - Environment and Society **Credits: 3**
- or
- ECO 180 - Citizens, Energy & Sustainability **Credits: 3**
- CHY 121 - General Chemistry I **Credits: 3**
- **And**
- CHY 123 - General Chemistry Laboratory I **Credits: 1**
- Gen Ed or Concentration Credits: 3

Second Year - Second Semester

- BIO 319 - General Ecology **Credits: 3**
- **Or**
- Concentration Credits: 3
- CHY 122 - General Chemistry II **Credits: 3**
- **And**
- CHY 124 - General Chemistry Laboratory II **Credits: 1**
- STS 132 - 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

- EES 217 - Field Research Experience in Ecology and Environmental Sciences **Credits: 0-2**
See footnote 2C
- EES 324 - Environmental Protection Law and Policy **Credits: 3**
or
- SFR 446 - Forest Resources Policy **Credits: 3**
or
- SMS 230 - Introduction to Marine Policy and Fisheries Management **Credits: 3**
- See footnote 6C
- ECO 381 - SL: Sustainability Science, Policy, and Action **Credits: 3**
Or
- PHI 232 - Environmental Ethics **Credits: 3**
- ENG 315 - Research Writing in the Disciplines **Credits: 3**
or
- ENG 317 - Business and Technical Writing **Credits: 3**
- Concentration Courses

Third Year - Second Semester

- EES 390 - Junior Seminar **Credits: 3**
- SFR 400 - Applied Geographic Information Systems **Credits: 4**
Or
- ERS 301 - Earth and Climate Science Geomatics **Credits: 4** (fall course) (**or** Senior Year)

- PHI 232 - Environmental Ethics **Credits: 3**
- Concentration Courses
- Free Electives

Fourth Year - First Semester

- EES 489 - Critical Issues in Ecology and Environmental Sciences **Credits: 4**
- Concentration Courses
- Free Elective Courses

Fourth Year - Second Semester

- Concentration Courses
- Free Elective Courses

Footnotes:

^{1C} BIO 200 required for all concentrations except for Earth and Environmental Sciences and Sustainability

^{2C} Students can take EES 217 in the first semester of their second or third year.

^{3C} Students in Ecosystem Ecology Marine Ecosystems must take SMS 300. BIO 319 is offered in the spring.

^{4C} Students in Ecosystems Ecology Forest Ecosystems Option must take SFR 205

^{5C} Students choose PHI 232 (fall or spring course) or ECO 381 (fall course)

^{6C} Only students in the Ecosystems Ecology - Forest Ecosystems Concentration take SFR 446. Only students in the Ecosystem Ecology - Marine Ecosystems Concentration take SMS 230.

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.

Students are encouraged to take at least 15 credits each semester.

First Year - First Semester

- 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

- ERS 101 - Introduction to Earth Science **Credits: 4**
Or
- ERS 102 - Environmental Geology **Credits: 4**
- Additional Course (optional)

First Year - Second Semester

- BIO 200 - Biology of Organisms **Credits: 4**
See footnote 2D
- EES 100 - Human Population and the Global Environment **Credits: 3**
- MAT 122 - Pre-Calculus **Credits: 4**
or
- MAT 126 - Calculus I **Credits: 4**
- SFR 222 - Environmental Communication Skills **Credits: 3**
or
- CMJ 107 - Communication and the Environment **Credits: 3**
or
- CMJ 103 - Public Speaking **Credits: 3**
- HON 112 - Civilizations: Past, Present and Future II **Credits: 4**

Second Year - First Semester

- EES 217 - Field Research Experience in Ecology and Environmental Sciences **Credits: 0-2**
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
- CHY 121 - General Chemistry I **Credits: 3**
And
- CHY 123 - General Chemistry Laboratory I **Credits: 1**
- HON 211 - Civilizations: Past, Present and Future III **Credits: 4**
- SFR 220 - Environment and Society **Credits: 3**
or
- ECO 180 - Citizens, Energy & Sustainability **Credits: 3**
- Concentration Course

Second Year - Second Semester

- BIO 319 - General Ecology **Credits: 3**
Or
- Concentration Credits: 3
- CHY 122 - General Chemistry II **Credits: 3**
And
- CHY 124 - General Chemistry Laboratory II **Credits: 1**
- STS 132 - 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

- EES 324 - Environmental Protection Law and Policy **Credits: 3**
or
- SFR 446 - Forest Resources Policy **Credits: 3**
or
- SMS 230 - Introduction to Marine Policy and Fisheries Management **Credits: 3**
- See footnote 3
- ENG 315 - Research Writing in the Disciplines **Credits: 3**
or
- ENG 317 - Business and Technical Writing **Credits: 3**

- HON 3XX Honors Tutorial Credits: 3
- Concentration Course

Third Year - Second Semester

- EES 390 - Junior Seminar **Credits:** 3
- SFR 400 - Applied Geographic Information Systems **Credits:** 4
- Or**
- ERS 301 - Earth and Climate Science Geomatics **Credits:** 4 (offered in Fall)
(can be taken senior year)
- Concentration Courses
- Free Electives

Fourth Year - First Semester

- HON 498 - Honors Thesis/Research I **Credits:** 3
- Concentration courses
- Free Electives

Fourth Year - Second Semester

- HON 499 - Honors Thesis/Research II **Credits:** 3
- Concentration Courses
- Free Electives

^{1D} Students that don't complete the honors sequence should consult with his/her advisor to make sure general education requirements are met.

^{2D} BIO 200 required for all concentrations except for Earth and Environmental Sciences and Sustainability

^{3D} Students can take EES 217 in first semester of their second or third year

^{4D} Students in the Ecosystem Ecology Marine Ecosystems Option must take SMS 300. BIO 319 is a spring course

^{5D} Students in Ecosystem Ecology Forest Ecosystem Option must take SFR 205

^{6D} Only students in the Ecosystem Ecology Forest Ecosystem option take SFR 446. Only students in the Ecosystem Ecology Marine Ecosystem Option take SMS 230.

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 all Economic Core Courses. A "C" or better is required in the capstone courses (ECO 470, ECO 475, ECO 489, HON 498/HON 499 or equivalent).

Other GPA requirements to graduate: Economics (ECO) coursework must be completed with a 2.0 or better cumulative average.

Required Course(s) for fulfilling Capstone Experience: ECO 470, ECO 475, ECO 489, HON 498/HON 499 or equivalent

Contact Information: School of Economics, 206 Winslow Hall, (207) 581-3150.

Economics majors build strong analytical and problem-solving skills. The Economics B.A. degree provides a broad coverage of economic concepts and methods, and it is flexible for students with double majors in other disciplines. This program is available as a fully online degree.

B.A. Requirements

1. Economics Core Courses (19 credits)

- 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 221 - Intermediate Macroeconomics **Credits:** 3
- ECO 220 - Intermediate Microeconomic Theory **Credits:** 3
- ECO 266 - Principles of Economic Data Analysis **Credits:** 3
- Capstone Course Credits: 3

2. Additional Economics Electives (15 credits)

A total of fifteen (15) additional Economics elective credit hours in ECO courses. A minimum of 9 credits must be at the 300 level or higher, 3 of which must be at the 400 level or higher (not counting the core above or capstone).

ECO 385 - Econometrics and ECO 480 - Introduction to Mathematical Economics are strongly recommended for students considering graduate study in Economics.

3. Mathematics Requirement (3-4 credits)

One of the following:

- MAT 115 - Applied Mathematics for Business and Economics **Credits:** 3
- MAT 116 - Introduction to Calculus **Credits:** 3

- MAT 122 - Pre-Calculus **Credits: 4**
- MAT 126 - Calculus I **Credits: 4**
- MAT 127 - Calculus II **Credits: 4**
- MAT 136 - Honors Level Calculus I **Credits: 4**
- students planning to attend Graduate School should take MAT 126

4. Statistics Requirement (3-4 credits)

One of the following statistics courses (or equivalent):

- STS 215 - Introduction to Statistics for Business and Economics **Credits: 3**
- STS 132 - Principles of Statistical Inference **Credits: 3**
- STS 332 - Statistics for Engineers **Credits: 3**
- STS 434 - Probability Theory **Credits: 3**

ELHS Bachelor of Arts Degree Requirements

To obtain a Bachelor of Arts degree:

1a. Students must complete an academic minor or a second academic major outside of their primary discipline. Appropriate minors and majors shall be determined by the academic unit of the student's primary major to ensure breadth of study.

or

1b. Alternatively, a student may 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.

and

2. Students must complete a minimum of 60 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 60 credits.) Depending on the particular program, the degree will require 120 or 121 total credits for graduation. In addition, each student must achieve a minimum 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.

6. Free Electives:

Students will utilize free electives to fill to 120 credits.

A Typical Four-Year Program in Economics (B.A. ECO)

(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**
- ENG 101 - College Composition **Credits: 3**
- Applied or Lab Science
- Economics Elective Credits: 3-6
- Math (MAT) or Statistics (STS) course

Second Year

- ECO 220 - Intermediate Microeconomic Theory **Credits: 3**
- ECO 221 - Intermediate Macroeconomics **Credits: 3**
- ECO 266 - Principles of Economic Data Analysis **Credits: 3**
- Applied or Lab Science
- Economics Electives Credits: 3-6
- Math (MAT) or Statistics (STS) Course

Third Year

- Economics Elective Credits: 3-9
- English (ENG) Technical Writing Course

Fourth Year

- ECO 489 - Senior Capstone **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 all Economics Core Courses. A "C" or better is required in the capstone course (ECO 470, ECO 475, ECO 489 HON 498/HON 499 or equivalent).

Other GPA requirements to graduate: Economics (ECO) coursework must be completed with a 2.0 or better cumulative average.

Required Course(s) for fulfilling Capstone Experience: ECO 470, ECO 475, ECO 489, HON 498/HON 499 or equivalent

Contact Information: School of Economics, 206 Winslow Hall, (207) 581-3150.

Economics majors build strong analytical and problem-solving skills. The Economics B.S. degree provides a broad coverage of economic concepts and methods, and it includes several quantitative courses. Students will learn skills that are highly valued in the labor force, and that help them succeed in graduate degree programs.

BS Requirements:

1. Economics Core Courses (25 credits)

- 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 220 - Intermediate Microeconomic Theory **Credits:** 3
- ECO 221 - Intermediate Macroeconomics **Credits:** 3
- ECO 266 - Principles of Economic Data Analysis **Credits:** 3
- ECO 385 - Econometrics **Credits:** 3
- ECO 480 - Introduction to Mathematical Economics **Credits:** 3
- Capstone Course Credits: 3

2. Additional Economic Electives (18 credits)

A total of eighteen (18) additional Economics elective credit hours in ECO courses. A minimum of 12 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).

3. Mathematics Requirement (3-4 credits)

One of the following mathematics courses (or equivalent):

- MAT 116 - Introduction to Calculus **Credits:** 3
 - MAT 126 - Calculus I **Credits:** 4
 - MAT 127 - Calculus II **Credits:** 4
 - MAT 136 - Honors Level Calculus I **Credits:** 4
- *students planning to attend Graduate School should take MAT 126/136

4. Statistics Requirement (3-4 credits)

One of the following:

- STS 215 - Introduction to Statistics for Business and Economics **Credits:** 3
- STS 132 - Principles of Statistical Inference **Credits:** 3
- STS 332 - Statistics for Engineers **Credits:** 3
- STS 434 - Probability Theory **Credits:** 3

5. Free Electives:

Students will utilize free electives to fill to 120 credits.

A Typical Four-year Program in Economics (B.S. ECO)

(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**
- ENG 101 - College Composition **Credits: 3**
- Applied or Lab Science
- Economics Elective Credits: 3-6
- Math (MAT) Course or Statistics (STS) Course

Second Year

- ECO 220 - Intermediate Microeconomic Theory **Credits: 3**
- ECO 221 - Intermediate Macroeconomics **Credits: 3**
- ECO 266 - Principles of Economic Data Analysis **Credits: 3**
- Applied or Lab Science
- Economics Electives: 3-9

Third Year

- ECO 385 - Econometrics **Credits: 3**
- ECO 480 - Introduction to Mathematical Economics **Credits: 3**
- Economic Electives: 3-12
- English (ENG) Technical Writing Course

Fourth Year

- ECO 489 - Senior Capstone **Credits: 3**
or other approved capstone
- Economics Elective Credits: 3-12

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: C- or higher is required for EES 140/141 and all PSE courses.

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 Management from the University of Maine. To receive both degrees, students in this concentration must receive a 'C' or higher in the following courses: BIO 327, ECO 120, EES 140, EES 141, ENG 101, MAT 115 or MAT 116 or MAT 122, PSE 100, PSE 221, PSE 396, and PSE 457 prior to transferring to UMass.

Other GPA requirements to graduate: None.

Students in the Turfgrass Management 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: Charlene Gray, ENH Program Coordinator, 102 Deering Hall, (207) 581-2948, charlene.gray@maine.edu

The School of Food and Agriculture is the home of the Environmental Horticulture Program. 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. It 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 interested in a Bachelor of Science in Environmental Horticulture may choose from one of the following concentrations:

Horticultural Business Concentration

Allows further preparation for entrepreneurial career avenues within the field of horticulture. Students enrolled in this concentration have an opportunity to receive a minor in Business Administration and may elect to continue an extra year to complete a Master's in Business Administration.

Landscape Design Concentration

Combines design skills and plant science knowledge into one curriculum.

Sustainable Horticulture Concentration

Provides an opportunity for further exploration in areas of plant physiology, nutrition, taxonomy and propagation.

Turfgrass Management Concentration

Allows further preparation for a turf-related career within the field of horticulture. Students completing this concentration will receive a well-rounded background in turf and ultimately two degrees; a B.S. in Environmental Horticulture with a concentration in Turfgrass Management (UMaine) and an A.S. in Turfgrass Management (UMass).

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.

BS in Environmental Horticulture with Horticulture Business concentration (120 credits)

Required Plant, Soil, and Environmental Science Courses (36 credits)

Science and Mathematics Courses (21 credits)

Business Courses (18 credits)

Economic Courses (9 credits)

English/Communication Courses (9 credits)

Human Values and Social Context Courses (12 credits)

Ethics Course (3 credits)

NFA 117 - First Year Success Seminar (1 credit)

General Elective Courses (11 credits)

BS in Environmental Horticulture with Landscape Design concentration (120 credits)

Required Plant, Soil, and Environmental Courses (49 credits)

Science and Mathematics Courses (21 credits)

Art Courses (6 credits)

Economic Courses (6 credits)

English/Communication Courses (9 credits)

Human Values and Social Context Courses (9 credits)

Ethics Course (3 credits)

NFA 117 - First Year Success Seminar (1 credit)

General Elective Courses (16 credits)

BS in Environmental Horticulture with Sustainable Horticulture concentration (120 credits)

Required Plant, Soil, and Environmental Courses (39 credits)

Science and Mathematics Courses (36 credits)

Economic Courses (6 credits)

English/Communication Courses (9 credits)

Human Values and Social Context Courses (12 credits)

Ethics Course (3 credits)

NFA 117 - First Year Success Seminar (1 credit)

General Elective Courses (14 credits)

BS in Environmental Horticulture with Turfgrass Management concentration (120 credits)

Required Plant, Soil, and Environmental Courses (30 credits)

Science and Mathematics Courses (25 credits)

Turfgrass Courses (25 credits)

Economic Courses (6 credits)

English/Communication Courses (9 credits)

Human Values and Social Context Courses (9 credits)

Ethics Course (3 credits)
NFA 117 - First Year Success Seminar (1 credit)
General Elective Courses (12 credits)

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 Minor in Business Administration

First Year - First Semester

- ECO 120 - Principles of Microeconomics **Credits: 3**
- ENG 101 - College Composition **Credits: 3**
- NFA 117 - First-Year Success Seminar **Credits: 1**
- PSE 100 - Plant Science **Credits: 4**
- PSY 100 - General Psychology **Credits: 3**

First Year - Second Semester

- CMJ 102 - Fundamentals of Interpersonal Communication **Credits: 3**
or
- CMJ 103 - Public Speaking **Credits: 3**
- ECO 121 - Principles of Macroeconomics **Credits: 3**
- MAT 115 - Applied Mathematics for Business and Economics **Credits: 3**
- General Education: Cultural Diversity and International Perspectives **Credits: 3**
- General Elective **Credits: 3**

Second Year - First Semester

- ACC 201 - Principles of Financial Accounting **Credits: 3**
- BMB 207 - Fundamentals of Chemistry **Credits: 3**
- BMB 209 - Fundamentals of Chemistry Laboratory **Credits: 1**
or
- CHY 121 - General Chemistry I **Credits: 3**
- CHY 123 - General Chemistry Laboratory I **Credits: 1**

- ECO 154 - Small Business Economics and Management **Credits: 3**
- PSE 221 - Woody Landscape Plants **Credits: 4**

Second Year - Second Semester

- ACC 202 - Principles of Managerial Accounting **Credits: 3**

- BIS 235 - Digital Business Transformation **Credits: 3**
- EES 140 - Soil Science **Credits: 3**
- EES 141 - Soil Science Laboratory **Credits: 1**
- General Education: Quantitative Literacy Credits: 3
- General Elective Credits: 3

Summer

- PSE 396 - Field Experience in Plant, Soil and Environmental Sciences **Credits: 1 - 16**
1 credit is required for this course.

Third Year - First Semester

- BIO 327 - Introductory Applied Entomology **Credits: 4**
- MGT 325 - Principles of Management and Organization **Credits: 3**
- PSE 219 - SL: Herbaceous Landscape Plants **Credits: 3**
- PSE 325 - Turf and Grounds Management **Credits: 3**
- General Elective Credits: 3

Third Year - Second Semester

- MKT 270 - Introduction to Marketing **Credits: 3**
- PSE 410 - Plant Propagation **Credits: 4**
- PSE 415 - Greenhouse Management **Credits: 4**
- PSE 425 - Landscape Management **Credits: 3**

Fourth Year - First Semester

- FIN 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**
- General Education: Western Cultural Tradition Credits: 3

Fourth Year - Second Semester

- ENG 317 - Business and Technical Writing **Credits: 3**
- PSE 430 - SL: Sustainable Horticulture and Agriculture Capstone **Credits: 3**
- General Education: Artistic and Creative Expression Credits: 3
- General Education: Population and the Environment Credits: 3
- General Elective Credits: 2

Short Course Options

- PSE 260 - Pesticide Applicator Certification **Credits: 1**
- PSE 261 - Nutrient Management **Credits: 1**
- PSE 262 - Introduction to Cannabis Cultivation and Science **Credits: 1**
- PSE 263 - Plant Health Diagnostics **Credits: 1**
- PSE 264 - Introduction to Composting **Credits: 1**
- PSE 265 - Soil Health for Farm Resilience and Climate Mitigation **Credits: 1**
- PSE 266 - Small Fruit and Berry Production **Credits: 1**
- PSE 269 - So You Want to Farm in Maine **Credits: 1**
- PSE 270 - Wild Blueberry Production **Credits: 1**

Required Courses in Suggested Sequence for the B.S. in Environmental Horticulture/Landscape Design Concentration

First Year - First Semester

- ECO 120 - Principles of Microeconomics **Credits: 3**
- ENG 101 - College Composition **Credits: 3**
- NFA 117 - First-Year Success Seminar **Credits: 1**
- PSE 100 - Plant Science **Credits: 4**
- PSY 100 - General Psychology **Credits: 3**

First Year - Second Semester

- ART 100 - Drawing I **Credits: 3**
- CMJ 102 - Fundamentals of Interpersonal Communication **Credits: 3**
or
- CMJ 103 - Public Speaking **Credits: 3**
- ECO 154 - Small Business Economics and Management **Credits: 3**
- MAT 115 - Applied Mathematics for Business and Economics **Credits: 3**
or
- MAT 116 - Introduction to Calculus **Credits: 3**
- General 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 - General Chemistry I **Credits: 3**
- CHY 123 - General Chemistry Laboratory I **Credits: 1**
- PSE 221 - Woody Landscape Plants **Credits: 4**
- General Education: Quantitative Literacy Credits: 3
- General Elective Credits: 3

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 210 - Digital Landscape Graphics **Credits: 2**
- General Education: Western Cultural Tradition Credits: 3
- General Elective Credits: 3

Summer

- PSE 396 - Field Experience in Plant, Soil and Environmental Sciences **Credits: 1 - 16**
1 credit is required for this course

Third Year - First Semester

- BIO 327 - Introductory Applied Entomology **Credits: 4**
- PSE 219 - SL: Herbaceous Landscape Plants **Credits: 3**
- PSE 224 - Site Analysis, Grading and Drainage **Credits: 3**
- PSE 325 - Turf and Grounds Management **Credits: 3**
- General Elective Credits: 3

Third Year - Second Semester

- PSE 227 - Landscape Design I **Credits: 4**
- PSE 410 - Plant Propagation **Credits: 4**
- PSE 415 - Greenhouse Management **Credits: 4**
- PSE 425 - Landscape Management **Credits: 3**

Fourth Year - First Semester

- PHI 232 - Environmental Ethics **Credits: 3**
or
- General Education: Ethics Credits: 3
- PSE 328 - Landscape Design II **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 - SL: Sustainable Horticulture and Agriculture Capstone **Credits: 3**
- General Education: Cultural Diversity and International Perspectives Credits: 3
- General Education: Population and the Environment Credits: 3
- General Elective Credits: 4

Short Course Options

- PSE 260 - Pesticide Applicator Certification **Credits: 1**
- PSE 261 - Nutrient Management **Credits: 1**
- PSE 262 - Introduction to Cannabis Cultivation and Science **Credits: 1**
- PSE 263 - Plant Health Diagnostics **Credits: 1**
- PSE 264 - Introduction to Composting **Credits: 1**
- PSE 265 - Soil Health for Farm Resilience and Climate Mitigation **Credits: 1**
- PSE 266 - Small Fruit and Berry Production **Credits: 1**
- PSE 269 - So You Want to Farm in Maine **Credits: 1**
- PSE 270 - Wild Blueberry Production **Credits: 1**

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 - First-Year Success Seminar **Credits: 1**
- PSE 100 - Plant Science **Credits: 4**

First Year - Second Semester

- CMJ 102 - Fundamentals of Interpersonal Communication **Credits: 3**
or
- CMJ 103 - Public Speaking **Credits: 3**
- ECO 154 - Small Business Economics and Management **Credits: 3**
- MAT 116 - Introduction to Calculus **Credits: 3**
- General Education: Cultural Diversity and International Perspectives **Credits: 3**
- General 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 - General Chemistry I **Credits: 3**
- CHY 123 - General Chemistry Laboratory I **Credits: 1**
- PSE 215 - Vegetable and Fruit Production **Credits: 3**
- PSE 221 - Woody Landscape Plants **Credits: 4**
- STS 132 - 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 - General Chemistry II **Credits: 3**
- CHY 124 - General Chemistry Laboratory II **Credits: 1**
- EES 140 - Soil Science **Credits: 3**
- EES 141 - Soil Science Laboratory **Credits: 1**
- General Education: Artistic and Creative Expression Credits: 3
- General Elective Credits: 4

Summer

- PSE 396 - Field Experience in Plant, Soil and Environmental Sciences **Credits: 1 - 16**
1 credit is required for this course

Third Year - First Semester

- BIO 327 - Introductory Applied Entomology **Credits: 4**
- PSE 219 - SL: Herbaceous Landscape Plants **Credits: 3**
- PSE 424 - Nursery Management **Credits: 3**
- SFR 439 - Biology of Woody Plants **Credits: 3**

Third Year - Second Semester

- BIO 319 - General Ecology **Credits: 3**
- PSE 410 - Plant Propagation **Credits: 4**
- PSE 415 - Greenhouse Management **Credits: 4**
- General Elective Credits: 3

Fourth Year - First Semester

- BIO 464 - Taxonomy of Vascular Plants **Credits: 4**
- PHI 232 - Environmental Ethics **Credits: 3**
or
- General Education: Ethics Credits: 3
- PSE 325 - Turf and Grounds Management **Credits: 3**
- PSE 403 - Weed Ecology and Management **Credits: 3**
- PSE 457 - Plant Pathology **Credits: 4**

Fourth Year - Second Semester

- ENG 317 - Business and Technical Writing **Credits: 3**
- PSE 430 - SL: Sustainable Horticulture and Agriculture Capstone **Credits: 3**
- General Education: Western Cultural Tradition Credits: 3
- General Education: Population and the Environment Credits: 3
- General Elective Credits: 4

Short Course Options

- PSE 260 - Pesticide Applicator Certification **Credits: 1**
- PSE 261 - Nutrient Management **Credits: 1**
- PSE 262 - Introduction to Cannabis Cultivation and Science **Credits: 1**
- PSE 263 - Plant Health Diagnostics **Credits: 1**
- PSE 264 - Introduction to Composting **Credits: 1**
- PSE 265 - Soil Health for Farm Resilience and Climate Mitigation **Credits: 1**
- PSE 266 - Small Fruit and Berry Production **Credits: 1**
- PSE 269 - So You Want to Farm in Maine **Credits: 1**
- PSE 270 - Wild Blueberry Production **Credits: 1**

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 - First-Year Success Seminar **Credits: 1**
- PSE 100 - Plant Science **Credits: 4**

First Year - Second Semester

- CMJ 102 - Fundamentals of Interpersonal Communication **Credits: 3**
or
- CMJ 103 - Public Speaking **Credits: 3**
- MAT 115 - Applied Mathematics for Business and Economics **Credits: 3**
or
- MAT 116 - Introduction to Calculus **Credits: 3**
- General Education: Western Cultural Tradition Credits: 3
- General Education: Cultural Diversity and International Perspectives Credits: 3
- General Elective Credits: 3

Second Year - First Semester

- BIO 327 - Introductory Applied Entomology **Credits: 4**
- BMB 207 - Fundamentals of Chemistry **Credits: 3**
- BMB 209 - Fundamentals of Chemistry Laboratory **Credits: 1**
or
- CHY 121 - General Chemistry I **Credits: 3**
- CHY 123 - General Chemistry Laboratory I **Credits: 1**
- PSE 221 - Woody Landscape Plants **Credits: 4**

- General Education: Quantitative Literacy Credits: 3

Second Year - Second Semester

- BIO 319 - General Ecology **Credits: 3**
- ECO 154 - 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

Summer

- PSE 396 - Field Experience in Plant, Soil and Environmental Sciences **Credits: 1 - 16**
1 credit is required for this course.

Third Year - First Semester

- PSE 219 - SL: Herbaceous Landscape Plants **Credits: 3**
- PSE 424 - Nursery Management **Credits: 3**
- PSE 457 - Plant Pathology **Credits: 4**
- General 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 - SL: Sustainable Horticulture and Agriculture Capstone **Credits: 3**

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
- General Elective Credits: 6

Fourth Year - Second Semester

- STOCKSCH 104 Plant Nutrients Credits: 2
- STOCKSCH 107 Turfgrass Insects Credits: 2
- STOCKSCH 112 Turfgrass Pathology Lab Credits: 2
- STOCKSCH 232 Turf Machinery Credits: 1

- STOCKSCH 240 Applied Calculations in Turf Management Credits: 2
- STOCKSCH 275 Turfgrass Physiology and Ecology Credits: 3
- STOCKSCH 340 Advanced Turfgrass Management Credits: 3

Short Course Options

- PSE 260 - Pesticide Applicator Certification **Credits: 1**
- PSE 261 - Nutrient Management **Credits: 1**
- PSE 262 - Introduction to Cannabis Cultivation and Science **Credits: 1**
- PSE 263 - Plant Health Diagnostics **Credits: 1**
- PSE 264 - Introduction to Composting **Credits: 1**
- PSE 265 - Soil Health for Farm Resilience and Climate Mitigation **Credits: 1**
- PSE 266 - Small Fruit and Berry Production **Credits: 1**
- PSE 269 - So You Want to Farm in Maine **Credits: 1**
- PSE 270 - Wild Blueberry Production **Credits: 1**

Notes:

¹C or higher in the following courses: BIO 327, ECO 120, EES 140, EES 141, ENG 101, MAT 115 or MAT 116 or MAT 122, PSE 100, PSE 221, PSE 396, and PSE 457 prior to transferring to UMass.

²An 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).

³Successful 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 from the University of Massachusetts Amherst.

Financial 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 all Economic Core Courses. A "C" or better is required in the capstone (ECO 470, ECO 475, ECO 489, HON 498/499 or equivalent)

Other GPA requirements to graduate: Economics (ECO) coursework must be completed with a 2.0 or better cumulative average.

Required Course(s) for fulfilling Capstone Experience: ECO 470, ECO 475, ECO 489, HON 498/499 or equivalent

Contact Information: School of Economics, 206 Winslow Hall, (207) 581-3150.

Financial Economics majors build strong analytical and problem-solving skills, with an emphasis on topics at the intersection of Economics and Finance.

B.A. Requirements

1. Financial Economics Core Course (28 credits):

- ACC 201 - Principles of Financial Accounting **Credits:** 3
- ACC 202 - Principles of Managerial Accounting **Credits:** 3
- 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 220 - Intermediate Microeconomic Theory **Credits:** 3
- ECO 221 - Intermediate Macroeconomics **Credits:** 3
- ECO 266 - Principles of Economic Data Analysis **Credits:** 3
- FIN 350 - Business Finance **Credits:** 3
- Capstone Course Credits: 3

2. Additional Financial Economics Electives (15 credits)

A total of fifteen (15) additional credit hours in ECO or FIN courses. A minimum of 9 credits must be ECO courses at the 300 level or higher, 3 of which must be ECO courses at the 400 level or higher (not counting the core above or capstone).

ECO 385 ECO 385 - Econometrics and ECO 480 ECO 480 - Introduction to Mathematical Economics are strongly recommended for students considering graduate study in Economics.

3. Mathematics Requirement (3-4 credits):

One of the following mathematics courses (or equivalent):

- MAT 115 - Applied Mathematics for Business and Economics **Credits:** 3

- MAT 116 - Introduction to Calculus **Credits:** 3
- MAT 122 - Pre-Calculus **Credits:** 4
- MAT 126 - Calculus I **Credits:** 4
- MAT 127 - Calculus II **Credits:** 4
- MAT 136 - Honors Level Calculus I **Credits:** 4
students planning to attend graduate school should take MAT 126/136

4. Statistics Requirement (3-4 credits):

One of the following statistics courses (or equivalent):

- STS 132 - Principles of Statistical Inference **Credits:** 3
- STS 215 - Introduction to Statistics for Business and Economics **Credits:** 3
- STS 332 - Statistics for Engineers **Credits:** 3
- STS 434 - Probability Theory **Credits:** 3

5. ELHS Bachelor of Arts Degree Requirements

To obtain a Bachelor of Arts degree:

1a. Students must complete an academic minor or a second academic major outside of their primary discipline. Appropriate minors and majors shall be determined by the academic unit of the student's primary major to ensure breadth of study.

or

1b. Alternatively, a student may 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.

and

2. Students must complete a minimum of 60 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 60 credits.) Depending on the particular program, the degree will require 120 or 121 total credits for graduation. In addition, each student must achieve a minimum 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.

6. Free Electives

Students will utilize free electives to reach 120 credits.

A Typical Four-year Program in Financial Economics (B.A. FIE)

(Listed below is the sequence for Financial 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**
- ENG 101 - College Composition **Credits: 3**
- Applied or Lab Science
- Math (MAT) or Statistics (STS) course

Second Year

- ACC 201 - Principles of Financial Accounting **Credits: 3**
- ACC 202 - Principles of Managerial Accounting **Credits: 3**
- ECO 220 - Intermediate Microeconomic Theory **Credits: 3**
- ECO 221 - Intermediate Macroeconomics **Credits: 3**
- ECO 266 - Principles of Economic Data Analysis **Credits: 3**
- Applied or Lab Science
- Financial Economics Elective Credits: 3-6
- Math (MAT) or Statistics (STS) Course

Third Year

- FIN 350 - Business Finance **Credits: 3**
- Financial Economics Elective Credits: 3-6
- English (ENG) Technical Writing Course

Fourth Year

- ECO 489 - Senior Capstone **Credits: 3** or other approved capstone
- Financial Economics Elective Credits: 3-6

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 all Economic Core Courses. A "C" or better is required in the capstone (ECO 470, ECO 475, ECO 489, HON 498/499 or equivalent)

Other GPA requirements to graduate: Economics (ECO) coursework must be completed with a 2.0 or better cumulative average.

Required Course(s) for fulfilling Capstone Experience: ECO 470, ECO 475, ECO 489, HON 498/499 or equivalent

Contact Information: School of Economics, 206 Winslow Hall, (207) 581-3150.

Financial Economics majors build strong analytical and problem-solving skills, with an emphasis on topics at the intersection of Economics and Finance. The Financial Economics B.S. degree provides a broad coverage of economic and financial concepts

and methods, and it includes several quantitative courses. Students will learn skills that are highly valued in the labor force, and that help them succeed in graduate degree programs.

1. Financial Economics Core Courses (34 credits):

- ACC 201 - Principles of Financial Accounting **Credits: 3**
- ACC 202 - Principles of Managerial Accounting **Credits: 3**
- 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 220 - Intermediate Microeconomic Theory **Credits: 3**
- ECO 221 - Intermediate Macroeconomics **Credits: 3**
- ECO 266 - Principles of Economic Data Analysis **Credits: 3**
- ECO 385 - Econometrics **Credits: 3**
- ECO 480 - Introduction to Mathematical Economics **Credits: 3**
- FIN 350 - Business Finance **Credits: 3**
- Capstone Course Credit: 3

2. Additional Financial Economics Electives (18 credits):

A total of eighteen (18) additional credit hours in ECO or FIN courses. A minimum of 12 credits must be ECO courses at the 300 level or higher, 6 of which must be ECO courses at the 400 level or higher (not counting the core above or capstone).

3. Mathematics Requirement (3-4 credits):

One of the following mathematics courses (or equivalent):

- MAT 116 - Introduction to Calculus **Credits: 3**
- MAT 126 - Calculus I **Credits: 4**
- MAT 127 - Calculus II **Credits: 4**
- MAT 136 - Honors Level Calculus I **Credits: 4**
students planning to attend graduate school should take MAT 126/136

4. Statistics Requirement (3-4 credits):

One of the following statistics courses (or equivalent):

- STS 132 - Principles of Statistical Inference **Credits: 3**
- STS 215 - Introduction to Statistics for Business and Economics **Credits: 3**
- STS 332 - Statistics for Engineers **Credits: 3**
- STS 434 - Probability Theory **Credits: 3**

5. Free Electives

Students will utilize free electives to reach 120 credits.

A Typical Four-year Program in Financial Economics (B.S. FIE)

(Listed below is the sequence for Financial 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**
- ENG 101 - College Composition **Credits: 3**
- Applied or Lab Science
- Math (MAT) or Statistics (STS) Course

Second Year

- ACC 201 - Principles of Financial Accounting **Credits: 3**
- ACC 202 - Principles of Managerial Accounting **Credits: 3**
- ECO 220 - Intermediate Microeconomic Theory **Credits: 3**
- ECO 221 - Intermediate Macroeconomics **Credits: 3**
- ECO 266 - Principles of Economic Data Analysis **Credits: 3**
- Applied or Lab Science
- Financial Economics Elective Credits: 3-6
- Math (MAT) or Statistics (STS) Course

Third Year

- ECO 385 - Econometrics **Credits: 3**
- ECO 480 - Introduction to Mathematical Economics **Credits: 3**
- FIN 350 - Business Finance **Credits: 3**
- Financial Economics Elective Credits: 3-12
- English (ENG) Technical Writing Course

Fourth Year

- ECO 489 - Senior Capstone **Credits: 3** or other approved capstone
- Financial Economics Elective 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: Students in the Human Nutrition and Dietetics concentration must have a C or higher in all required FSN courses. Students in the Food Management and Food Science concentrations must have a C- or higher in all required FSN courses.

Other GPA requirements to graduate: None.

Required Course(s) for fulfilling Capstone Experience: FSN 401 or FSN 520.

Graduate Courses: 500-600 level course descriptions can be found in the University of Maine Graduate Catalog

Contact Information: Eileen Molloy, Undergraduate Program Coordinator, 111 Hitchner Hall, (207) 581-3121, eileen.molloy@maine.edu

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. Each concentration can lead to a variety of careers within the broad field of food science and human nutrition.

Food Science Concentration

The Food Science concentration is the application of the principles of the basic sciences including chemistry, biology, and biochemistry to food systems. This approved program through the Institute of Food Technologists is a challenging and rewarding program and requires a strong background in mathematics and science. Students in Food Science with a grade point average of 3.0 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 and more information about this option can be found in the Graduate Catalog.

Human Nutrition and Dietetics Concentration

The Human Nutrition and Dietetics concentration focuses on the study of the effect of food, food behavior and nutrients on people's health, and the role of diet in prevention or treatment of chronic diseases. It is a diverse, rewarding and growing field that requires a strong background in science. This concentration is an accredited Didactic Program in Nutrition and Dietetics (DPD) by the Accreditation Council for Education in Nutrition and Dietetics (ACEND) and is the only accredited program in the state of Maine. Students in this concentration are eligible for continuing education and internship to become a Registered Dietitian Nutritionist. Or, they can pursue careers in wellness nutrition, health or research.

Food Management Concentration

Food management provides a unique combination of food and business courses to prepare students for a wide variety of career opportunities in management of food and food resources. This concentration provides flexibility in planning a curriculum to suit an individual's needs. Students are encouraged to add a minor in either Business Administration or Sustainable Food Systems and choose professional electives that best prepare them for future employment.

Foundation for higher education

The requirements in Food Science and Human Nutrition will be sufficient for admission to the graduate schools in each program and the combined MS/Dietetic Internship program. The Food Science, and Human Nutrition and Dietetics concentrations, can easily meet the entrance requirements for medical, dental, and veterinary schools with advising on some additional courses. For Food Science students, additional courses in physics and chemistry are required. For Human Nutrition and Dietetics students, additional courses in physics, chemistry and mathematics are needed. Students in the Food Management concentration would be prepared for graduate school in business if they take the appropriate business courses at the undergraduate level.

Transfer criteria

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. Contact the Undergraduate Program Coordinator to meet to discuss your interest in these programs.

Graduation Requirements

To obtain this degree students must meet the requirements of the University, those requirements specific to the major and the requirements for the concentration.

Food Science and Human Nutrition Major

1. Satisfy general education requirements
2. Satisfy bachelor of science requirements
3. NFA 117 - First Year Success Seminar
4. Biology requirement: BIO 100
5. Minimum Food Science and Human Nutrition requirements: FSN 101, 103, 104, 270, 330, and 340
6. Communications requirements: ENG 101 and CMJ 103
7. Psychology requirement: PSY 100

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 and 210
4. Communications requirements: ENG 317
5. Food Science and Human Nutrition requirements: FSN 101, 103, 104, 202, 236, 265, 270, 305, 330, 340, 396, 415, 425, 436, 440, and 520
6. Mathematics requirement: MAT 115 and STS 132
7. Business requirements: ACC 201, BIS 235, and MGT 325
8. Economics requirements: ECO 120, 121, and 154
9. Other requirements: COS 103, INV 121, and PSE 105
10. Students will be encouraged to declare a minor in either Business Administration or in Sustainable Food Systems.
11. Grades of C- or higher in all FSN required courses and courses substituting for FSN required courses.

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, and 323
5. Chemistry requirements: CHY 121, 122, 123, 124, BMB 221 and 222 or CHY 251 and 253
6. Communications requirement: ENG 317
7. Food Science and Human Nutrition requirements: FSN 101, 103, 104, 270, 330, 340, 396, 425, 436, 438, 439, 450, 475, 482, 483, 485, 486, 502, 520, 585, and 587
8. Mathematics requirement: MAT 126 and STS 132
9. Physics requirement: PHY 111 or PHY 121
10. Grades of C- or higher in all FSN required courses and courses substituting for FSN required courses.

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, 240, and 322
5. Communications requirement: ENG 201
6. Food Science and Human Nutrition requirements: FSN 101, 103, 104, 202, 230, 265, 270, 290, 301, 305, 330, 340, 401, 410, 412, 420, and 430
7. Mathematics requirement: MAT 116 (MAT 122 or 126 also accepted)
8. Statistics requirement: PSY 241 or STS 132
9. Economics requirements: ECO 154
10. Pathophysiology requirement: NUR 303
11. Grades of C or higher in all FSN required courses and courses substituting for FSN required courses.

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 - First-Year Success Seminar **Credits: 1**
- PSY 100 - General Psychology **Credits: 3**

First Year - Second Semester

- CMJ 103 - Public Speaking **Credits: 3**
- COS 103 - Introduction to Spreadsheets **Credits: 1**
- ECO 120 - Principles of Microeconomics **Credits: 3**
- FSN 103 - Science of Food Preparation **Credits: 3**
- FSN 104 - Science of Food Preparation Lab **Credits: 1**
- MAT 115 - Applied Mathematics for Business and Economics **Credits: 3**

Second Year - First Semester

- ECO 121 - Principles of Macroeconomics **Credits: 3**
- FSN 202 - Foodservice Management **Credits: 3**
- FSN 305 - Foods Laboratory **Credits: 1**
- PSE 105 - Principles of Sustainable Agriculture **Credits: 3**
- General Elective Credits: 6

Second Year - Second Semester

- BIS 235 - Digital Business Transformation **Credits: 3**
- ECO 154 - Small Business Economics and Management **Credits: 3**
- FSN 265 - Application of Nutrition Principles **Credits: 3**
- General Education: Western Cultural Tradition Credits: 3
- General Elective Credits: 3

Third Year - First Semester

- ACC 201 - Principles of Financial Accounting **Credits: 3**
- BMB 207 - Fundamentals of Chemistry **Credits: 3**
- BMB 209 - Fundamentals of Chemistry Laboratory **Credits: 1**
- FSN 330 - Introduction to Food Science **Credits: 3**
- FSN 340 - Food Processing Laboratory **Credits: 1**
- General 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**
- INV 121 - Fundamentals of Innovation **Credits: 3**

Fourth Year - First Semester

- MGT 325 - Principles of Management and Organization **Credits: 3**
- FSN 270 - World Food and Culture **Credits: 3**
- FSN 425 - Contemporary Issues in the Food Industry **Credits: 1**
- FSN 520 - Food Product Development Credits: 3
- STS 132 - Principles of Statistical Inference **Credits: 3**
- General Electives Credits: 6

Fourth Year - Second Semester

- FSN 236 - Introduction to Food Safety and Food Processing Sanitation **Credits: 1**
- FSN 396 - Field Experience in Food Science and Human Nutrition **Credits: 1 - 16**
- FSN 436 - Food Laws and Regulations **Credits: 3**
- FSN 440 - Utilization of Aquatic Food Resources **Credits: 3**
- FSN 415 - Food Safety Systems-Preventive Controls for Human Food **Credits: 1**
- General Electives Credits: 6

Food Science Concentration

First Year - First Semester

- CHY 121 - General Chemistry I **Credits: 3**
- CHY 123 - General Chemistry Laboratory I **Credits: 1**

- FSN 101 - Introduction to Food and Nutrition **Credits: 3**
- MAT 126 - Calculus I **Credits: 4**
- NFA 117 - First-Year Success Seminar **Credits: 1**
- PSY 100 - General Psychology **Credits: 3**

First Year - Second Semester

- CHY 122 - General Chemistry II **Credits: 3**
- CHY 124 - General Chemistry Laboratory II **Credits: 1**
- CMJ 103 - Public Speaking **Credits: 3**
- ENG 101 - College Composition **Credits: 3**
- FSN 103 - Science of Food Preparation **Credits: 3**
- FSN 104 - Science of Food Preparation Lab **Credits: 1**

Second Year - First Semester

- BIO 100 - Basic Biology **Credits: 4**
- 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 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**
or
- BIO 208 - Anatomy and Physiology **Credits: 4**
- BMB 322 - Biochemistry **Credits: 3**
- BMB 323 - Biochemistry Laboratory **Credits: 2**
- STS 132 - Principles of Statistical Inference **Credits: 3**
- General Electives Credits: 3

Third Year - First Semester

- BMB 300 - General Microbiology **Credits: 3**
- BMB 305 - General Microbiology Laboratory **Credits: 2**
- FSN 270 - World Food and Culture **Credits: 3**
- FSN 502 - Food Preservation Credits: 3
- FSN 520 - Food Product Development 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 475 - Sensory Evaluation Laboratory **Credits: 1**
- FSN 585 - Sensory Evaluation I **Credits: 3**
- PHY 111 - General Physics I **Credits: 4**
- or
- PHY 121 - Physics for Engineers and Physical Scientists I **Credits: 4**

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**
- General Education: Artistic and Creative Expression **Credits: 3**
- General Electives **Credits: 6**

Fourth Year - Second Semester

- FSN 436 - Food Laws and Regulations **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**
- General Education: Human Values and Social Context **Credits: 3**

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 - First-Year Success Seminar **Credits: 1**
- PSY 100 - General Psychology **Credits: 3**

First Year - Second Semester

- BIO 208 - Anatomy and Physiology **Credits: 4**
- CMJ 103 - Public Speaking **Credits: 3**
- FSN 103 - Science of Food Preparation **Credits: 3**
- FSN 104 - Science of Food Preparation Lab **Credits: 1**
- MAT 116 - Introduction to Calculus **Credits: 3**

- or
- 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 - General Chemistry I **Credits: 3**
- CHY 123 - General Chemistry Laboratory I **Credits: 1**

- FSN 270 - World Food and Culture **Credits: 3**
- FSN 330 - Introduction to Food Science **Credits: 3**
- FSN 340 - Food Processing Laboratory **Credits: 1**
- Artistic and Creative Expression Gen Ed Credits: 3
- General Elective Credits: 3

Second Year - Second Semester

- BMB 208 - Elementary Physiological Chemistry **Credits: 3**
- or
- CHY 122 - General Chemistry II **Credits: 3**
- BMB 240 - Microbiology for the Professional Nurse **Credits: 3**
- ENG 201 - Strategies for Writing Across Contexts **Credits: 3**
- FSN 265 - Application of Nutrition Principles **Credits: 3**
- FSN 290 - Career Pathways in Human Nutrition and Dietetics **Credits: 1**
- General Education: Artistic and Creative Expression Credits: 3
- General Elective 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 202 - Foodservice Management **Credits: 3**
- FSN 230 - Nutritional and Medical Terminology **Credits: 1**
- FSN 301 - Life Cycle Nutrition **Credits: 3**
- FSN 305 - Foods Laboratory **Credits: 1**
- General Elective Credits: 3

Third Year - Second Semester

- BMB 322 - Biochemistry **Credits: 3**
- FSN 430 - Counseling and Diet Therapy **Credits: 3**
- NUR 303 - Pathophysiology **Credits: 3**
- PSY 241 - Statistics in Psychology **Credits: 4**
- or
- STS 132 - Principles of Statistical Inference **Credits: 3**
- General Elective Credits: 3

Fourth Year - First Semester

- ECO 154 - Small Business Economics and Management **Credits: 3**
- FSN 410 - Human Nutrition and Metabolism **Credits: 3**
- FSN 412 - Medical Nutrition Therapy I **Credits: 3**
- General Elective Credits: 3
- General Education: Western Cultural Tradition Credits: 3

Fourth Year - Second Semester

- FSN 401 - Community Nutrition **Credits: 4**
- FSN 420 - Medical Nutrition Therapy II **Credits: 4**
- General Education Ethics Credits: 3
- General Elective Credits: 3

Required Courses in Suggested Sequence for the Five-Year or Six-Year Combined BS/MS degree in Food Science and Human Nutrition

Food Science Concentration

First Year - First Semester

- CHY 121 - General Chemistry I **Credits: 3**
- CHY 123 - General Chemistry Laboratory I **Credits: 1**
- FSN 101 - Introduction to Food and Nutrition **Credits: 3**
- MAT 126 - Calculus I **Credits: 4**
- NFA 117 - First-Year Success Seminar **Credits: 1**
- PSY 100 - General Psychology **Credits: 3**

First Year - Second Semester

- CHY 122 - General Chemistry II **Credits: 3**
- CHY 124 - General Chemistry Laboratory II **Credits: 1**
- CMJ 103 - Public Speaking **Credits: 3**
- ENG 101 - College Composition **Credits: 3**
- FSN 103 - Science of Food Preparation **Credits: 3**

- FSN 104 - Science of Food Preparation Lab **Credits: 1**

Second Year - First Semester

- BIO 100 - Basic Biology **Credits: 4**
- 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 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**
or
- BIO 208 - Anatomy and Physiology **Credits: 4**
- BMB 322 - Biochemistry **Credits: 3**
- BMB 323 - Biochemistry Laboratory **Credits: 2**
- FSN 270 - World Food and Culture **Credits: 3**
- STS 132 - 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**
- General Electives **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 475 - Sensory Evaluation Laboratory **Credits: 1**
- FSN 585 - Sensory Evaluation I **Credits: 3**
- General 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**
- General Education: Artistic and Creative Expression Credits: 3
- General Education: Human Values and Social Context Credits: 3
- General Elective Credits: 3

Fourth Year - Second Semester

- FSN 436 - Food Laws and Regulations **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
- PHY 111 - General Physics I **Credits: 4**
or
- PHY 121 - Physics for Engineers and Physical Scientists I **Credits: 4**

Awarded B.S. degree after completion of fourth year, second semester.

Fourth Year - Summer

- FSN 695 - Food Science and Human Nutrition Practicum Credits: 3-6
or
- FSN 699 - Graduate Thesis Credits: 6 (see Graduate catalog for course descriptions)

Fifth Year - First Semester

- FSN 571 - Technical Presentations Credits: 1
- FSN 524 - Responsible Design, Conduct & Analysis of Research Credits: 3
Or
PSE 509 - Experimental Design Credits: 3
or
STS 434 - Introduction to Statistics Credits: 3
or
STS 437 - Statistical Methods in Research Credits: 3
500 level FSN Credits: 3

Fifth Year - Second Semester

- 500 or 600 level FSN course Credits: 3 (thesis students), Credits 6 (non-thesis students) FSN
- 500 level elective Credits: 3
- FSN 671 - Advanced Graduate Seminar Credits: 1
- FSN 400+ level professional electives Credits: 1-4

Awarded MS degree after completion of the fifth year or sixth year for thesis students.

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 490, SFR 492 or SFR 498/499

Contact Information: Candice Goyette, Student Academic Services Coordinator, 201B Nutting Hall, 581-4737, candice.goyette@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 1,750-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 13,500 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 over \$500,000 for the 2020-2021 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.

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

- ENG 101 - College Composition **Credits: 3**
- MAT 116 - Introduction to Calculus **Credits: 3**
- SFR 101 - Introduction to Forest Resources **Credits: 1**
- SFR 103 - Introduction to Forest Resource Professions **Credits: 1**
- SFR 106 - Introduction to Forest Land Navigation and Technology **Credits: 2**
- SFR 107 - Forest Vegetation **Credits: 3**
- General Education Course Credits: 3

First Year - Second Semester

- 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 201 - Wildland Firefighter Preliminary Training **Credits: 0-1**
- SFR 205 - Forest Measurements and Statistics **Credits: 3**
- SFR 220 - Environment and Society **Credits: 3**
- or
- EES 100 - Human Population and the Global Environment **Credits: 3**
- or
- WLE 230 - Introduction to Wildlife Conservation **Credits: 3**

Second Semester - May Term

- SFR 207 - Forest Field Skills and Management **Credits: 2**

Second Year - First Semester

- CHY 121 - General Chemistry I **Credits: 3**
and
- CHY 123 - General Chemistry Laboratory I **Credits: 1**
or
- BMB 207 - Fundamentals of Chemistry **Credits: 3**
and
- BMB 209 - Fundamentals of Chemistry Laboratory **Credits: 1**
- CMJ 103 - Public Speaking **Credits: 3**
or
- SFR 222 - Environmental Communication Skills **Credits: 3**
- SFR 407 - Forest Ecology **Credits: 3**
- General Education Course Credits: 3
- Directed Elective Credits: 3

Second Year - Second Semester - Winter Term

- SFR 213 - Forest Operations Field Tour **Credits: 1**

Second Year - Second Semester

- EES 140 - Soil Science **Credits: 3**
- SFR 400 - Applied Geographic Information Systems **Credits: 4**
- SFR 402 - Advanced Forest Measurements and Models **Credits: 3**
- Second Lab-Science Course (see footnote 1) Credits: 4

Third Year - First Semester

- SFR 401 - Timber Harvesting **Credits: 3**
- SFR 406 - Remote Sensing of the Forest Environment **Credits: 3**
- SFR 408 - Silviculture **Credits: 3**
- SFR 409 - Forest Ecology and Silviculture Field Laboratory **Credits: 2**
- Directed Elective Credits: 3

Third Year - Second Semester

- SFR 446 - Forest Resources Policy **Credits: 3**
- SFR 457 - Tree Pests and Disease **Credits: 3**
or
- SFR 557 Tree Pests and Disease Credits: 3
- SFR 458 - Tree Pests and Disease Lab **Credits: 1**
- WLE 431 - Wildlife Management in Forestry **Credits: 3**
- Directed Elective Credits: 3
- Electives Credits: 3

Fourth Year - First Semester

- SFR 413 - Boundary Line Identification and Deed Research **Credits: 1**
- SFR 444 - Forest Resources Economics **Credits: 3**
- SFR 477 - Forest Landscape Management and Planning **Credits: 3**
- SFR 489 - Tools for Consulting Foresters **Credits: 1**
- Directed Elective Courses Credits: 6

Fourth Year - Second Semester

- ENG 317 - Business and Technical Writing **Credits: 3**
- SFR 464 - Forest Resources Business, Marketing and Entrepreneurship **Credits: 3**
- SFR 490 - Small Woodlot Management **Credits: 3-4**
- Directed Electives Credits: 3
- Elective Credits: 2
See footnote 3

Footnotes

¹ Choose 1 lab-science course(s): PHY 111, PHY 121, CHY 122 & 124, or BMB 208 & 210, ERS 101, or ERS 102

² Students can replace SFR 490 with SFR 492 or SFR 498/499 with advisor approval. A minimum of 3 credits are needed in SFR 492

³ Any student who receives a semester GPA of less than 2.0 or receives a Conduct Violation must meet with the Director of 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 students 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.

Directed Electives Requirement

Students need to take 18 credits of Directed Electives. The requirement can be met by enrolling in any of the following minors or double majors:

Minors: Forest Products, Forest Recreation Management, Biology, Botany, Ecology & Environmental Sciences, Economics, Environmental Horticulture, Soil Science, Sustainable Agriculture, Survey Engineering Technology, Zoology

Double majors: Parks, Recreation & Tourism, Sustainable Materials & Technology, Botany, Earth Sciences, Ecology & Environmental Sciences, Wildlife Ecology, Zoology

The requirement can also be met by taking any combination of the following courses. Courses are organized by topic area. Care is needed to take the appropriate prerequisites for the higher-number courses. Note: A course used as a second lab course does not qualify as a directed elective.

General Forest Resources

- SFR 150 - Introduction to Tourism **Credits: 3**
- SFR 215 - Introduction to Sustainable Materials and Technology **Credits: 3**
- SFR 228 - Forest Recreation Management **Credits: 3**
- SFR 411 - Forestry Rules of Maine **Credits: 1**

- SFR 414 - Introduction to Third-Party Forest Certification **Credits: 1**
- SFR 450 - Processing of Biomaterials **Credits: 4**
- WLE 461 - Human Dimensions of Fisheries and Wildlife Conservation **Credits: 3**

Recreation (or ask about minor or double major)

- SFR 150 - Introduction to Tourism **Credits: 3**
- SFR 228 - Forest Recreation Management **Credits: 3**
- SFR 434 - Recreation Site Planning and Management **Credits: 3**
- SFR 452 - Environmental Interpretation **Credits: 4**
- SFR 479 - Environmental Attitudes and Behaviors **Credits: 3**
- SFR 480 - Wilderness and Protected Areas Management **Credits: 3**

Sustainable Materials (or ask about minor or double major)

- PHY 111 - General Physics I **Credits: 4**
- SFR 215 - Introduction to Sustainable Materials and Technology **Credits: 3**
- SFR 216 - Wood Identification **Credits: 1**
- SFR 450 - Processing of Biomaterials **Credits: 4**
- SFR 455 - Bioenergy Sources, Systems and Environmental Effects **Credits: 3**

Forest Health

- BIO 327 - Introductory Applied Entomology **Credits: 4**
- BIO 432 - Biology of the Fungi **Credits: 4**
- BIO 452 - Plant Physiology **Credits: 3**
- BMB 208 - Elementary Physiological Chemistry **Credits: 3**
and
- BMB 210 - Elementary Physiological Chemistry Laboratory **Credits: 1**
or
- CHY 122 - General Chemistry II **Credits: 3**
and
- CHY 124 - General Chemistry Laboratory II **Credits: 1**
- BMB 221 - Organic Chemistry **Credits: 3**
- BMB 222 - Laboratory in Organic Chemistry **Credits: 1**
- PSE 263 - Plant Health Diagnostics **Credits: 1**
- SFR 439 - Biology of Woody Plants **Credits: 3**

Wildlife Conservation (or ask about double major)

- WLE 200 - Ecology **Credits: 3**
- WLE 323 - Introduction to Conservation Biology **Credits: 3**
- WLE 461 - Human Dimensions of Fisheries and Wildlife Conservation **Credits: 3**

Ecology and Environmental Science (or ask about minor or double major)

- BIO 205 - Field Natural History of Maine **Credits: 4**
- ECO 381 - SL: Sustainability Science, Policy, and Action **Credits: 3**
- EES 100 - Human Population and the Global Environment **Credits: 3**
- EES 141 - Soil Science Laboratory **Credits: 1**
- EES 324 - Environmental Protection Law and Policy **Credits: 3**
- ERS 101 - Introduction to Earth Science **Credits: 4**

Botany (or ask about in or double major)

- BIO 310 - Plant Biology **Credits: 4**
- BIO 452 - Plant Physiology **Credits: 3**
- BIO 464 - Taxonomy of Vascular Plants **Credits: 4**
- SFR 439 - Biology of Woody Plants **Credits: 3**
- WLE 423 - Wetland Ecology and Conservation **Credits: 4**

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, william.ellis@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, oceanography, or aquaculture. The biological concentration emphasizes ecology, behavior, physiology, genetics, and population and community structure of marine animals, plants, and microbes. The oceanography 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

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 (or SMS 430)
5. Chemistry: CHY 121/122, 123/124
6. Mathematics: MAT 126 (or MAT 116) and STS 132
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 302 (or SMS 484)
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.
12. Plus three Marine Science Practicum (MSP) courses, one from each of the following three categories: a. Observational and Experimental Methods, b. Data Analysis, Interpretation and Modeling, c. Synthesis and Communication (see below for a listing of classes in each category).
13. Plus 6 additional credits of upper-level SMS electives (300-level or higher).

Group A: Observational and experimental methods. Students completing these courses will develop and reinforce their skills in collecting and documenting field and laboratory measurements, and operating laboratory equipment. In these courses, students will also be introduced to concepts of sampling and experimental design.

Taught in Orono:

SMS-204 (physical concepts in marine science)

SMS-303 (IMS III: Oceanography)

SMS-304 (IMS IV: Comparative Physiology, Cell & Molecular Biology)

SMS-416 (Marine Engineering Literacy)

Taught at the Darling Marine Center:

SMS-352 (SBS: Marine Ecology)

SMS-479 (SBS: Microbial Ecology)

SMS-480 (SBS: Biology of Marine Invertebrates)

SMS-491 (SBS: Marine Fisheries Ecology)

SMS-491 (SBS: Coastal and Estuarine Oceanography)

Group B: Data analysis, interpretation and modeling. Students completing these courses will develop quantitative and logical skills for the analysis and interpretation of data. Areas of emphasis could include data mining and working with databases, computer programming, and development and operation of models that simulate marine systems.

Taught in Orono:

SMS-204 (physical concepts in marine science)

SMS-303 (IMS III: Oceanography)

SMS-304 (IMS IV: Comparative Physiology, Cell & Molecular Biology)

SMS 321 (Intro. to Fisheries Science)

SMS-375 (Intro to Marine Science Data Analysis and Computer Programming)

SMS-416 (Marine Engineering Literacy)

SMS-430 (Microbes in the Marine Environment) Currently can be used a core course

SMS-491 (Contemporary Issues in Marine Policy)

SMS-354 (The Arctic Ocean)

Taught at the Darling Marine Center:

SMS-352 (SBS: Marine Ecology)

SMS-479 (SBS: Microbial Ecology)

SMS-491 (SBS: Marine Fisheries Ecology)

SMS-491 (SBS: Coastal and Estuarine Oceanography)

Group C: Synthesis and Communication. Students completing these courses will develop and reinforce skills related to understanding, synthesizing, and communicating scientific knowledge in written and oral formats.

Taught in Orono:

SMS-303 (IMS III: Oceanography)

SMS-304 (IMS IV: Comparative Physiology, Cell & Molecular Biology)

SMS-354 (The Arctic Ocean)

SMS-375 (Intro to Marine Science Data Analysis and Computer Programming)

SMS-430 (Microbes in the Marine Environment) Currently can be used a core course

SMS-491 (Contemporary Issues in Marine Policy)

Taught at the Darling Marine Center:

SMS-352 (SBS: Marine Ecology)

SMS-479 (SBS: Microbial Ecology)

SMS-491 (SBS: Marine Fisheries Ecology)

SMS-491 (SBS: Sea Change) New course

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 6 credits of upper-level SMS electives (mentioned above) 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 365, BIO 445, BIO 450, BIO 452, BIO 453, BIO 350, 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 327, SMS 350, SMS 352, SMS 354, SMS 373, SMS 374, SMS 375, SMS 402, SMS 422, SMS 423, SMS 425, SMS 480, SMS 481, SMS 482, SMS 484

Concentration in Oceanography :

Students who wish to declare a concentration in Oceanography 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. The 6 credits of upper-level SMS electives (mentioned above) should be chosen from the list of SMS Oceanography electives* (see below).

* SMS Oceanography electives include:

INT 484, SMS 300 or SMS 352, SMS 325, SMS 327, SMS 330, SMS 333, SMS 350, SMS 375, SMS 402, SMS 410, SMS 430, SMS 460, SMS 479, SMS 481, SMS 482, SMS 484, SMS 490, SMS 491, SMS 520, SMS 560

4. Complete an additional 6 credits either from the SMS 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, STS 332, MAT 351, STS 434, STS 437, PHY 451, PHY 452, SIE 4

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:

AVS 411, SMS 211, SMS 422, SMS 425, SMS 449

Required Courses and Suggested Electives 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 - First-Year Success Seminar **Credits: 1**
- SMS 100 - Introduction to Ocean Science **Credits: 3**

First Year - Second Semester

- MAT 126 - Calculus I **Credits: 4**
or
- MAT 116 - Introduction to Calculus **Credits: 3**
- 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 - General Chemistry I **Credits: 3**
- CHY 123 - General Chemistry Laboratory I **Credits: 1**
- SMS 230 - Introduction to Marine Policy and Fisheries Management **Credits: 3**
- STS 132 - 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 - General Chemistry II **Credits: 3**
- CHY 124 - General Chemistry Laboratory II **Credits: 1**
- PHY 112 - General Physics II **Credits: 4**
- Marine Science Practicum, Group A
- 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**
- Marine Science Practicum, Group B

- 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**
or
- SMS 430 - Microbes in the Marine Environment **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 400 - Capstone Research Experience in Marine Science **Credits: 1-4**
- SMS 404 - Capstone Seminar in Marine Science **Credits: 1**
- Marine Science Electives Credits: 3-6
- General Education Requirements Credits: 3-6

Required Courses and Suggested Electives in Suggested Sequence for the B.S. in Marine Science: Oceanography Concentration

First Year - First Semester

- BIO 100 - Basic Biology **Credits: 4**
- CHY 121 - General Chemistry I **Credits: 3**
- CHY 123 - General Chemistry Laboratory I **Credits: 1**
- MAT 116 - Introduction to Calculus **Credits: 3**
or
- MAT 126 - Calculus I **Credits: 4**

- NFA 117 - First-Year Success Seminar **Credits: 1**
- SMS 100 - Introduction to Ocean Science **Credits: 3**

First Year - Second Semester

- CHY 122 - General Chemistry II **Credits: 3**
- CHY 124 - General Chemistry Laboratory II **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 132 - Principles of Statistical Inference **Credits: 3**
- PHY 122 - Physics for Engineers and Physical Scientists II **Credits: 4**
- SMS 108 - Beaches and Coasts **Credits: 3**
- Marine Science Practicum Group A
- SMS Marine Science 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**
- Marine Science Practicum, Group B
- SMS Marine Science Oceanography elective Credits: 3-6

Third Year - Second Semester

- BMB 280 - Introduction to Molecular and Cellular Biology **Credits: 3**
or
- SMS 430 - Microbes in the Marine Environment **Credits: 3**

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

- Marine Science Practicum, Group C
- SMS 375 - Introduction to Marine Science Data Analysis and Computer Programming **Credits:** 3
- SMS 400 - Capstone Research Experience in Marine Science **Credits:** 1-4
- SMS 404 - Capstone Seminar in Marine Science **Credits:** 1
- Recommended SMS Electives Credits: 3-4
- General Education Electives Credits: 6-9

Required Courses and Suggested Electives 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 - First-Year Success Seminar **Credits:** 1
- SMS 100 - Introduction to Ocean Science **Credits:** 3

First Year - Second Semester

- MAT 116 - Introduction to Calculus **Credits:** 3
- or
- 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 - General Chemistry I **Credits: 3**
- CHY 123 - General Chemistry Laboratory I **Credits: 1**
- SMS 230 - Introduction to Marine Policy and Fisheries Management **Credits: 3**
- STS 132 - Principles of Statistical Inference **Credits: 3**
- PHY 111 - General Physics I **Credits: 4**

Second Year - Second Semester

- CHY 122 - General Chemistry II **Credits: 3**
- CHY 124 - General Chemistry Laboratory II **Credits: 1**
- PHY 112 - General Physics II **Credits: 4**
- Marine Science Practicum, Group A
- General Education Requirement Credits: 6

Third Year - First Semester

- SMS 302 - Oceanography **Credits: 3**
- Marine Science Practicum, Group B
- 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**
or
- SMS 430 - Microbes in the Marine Environment **Credits: 3**
- SMS 425 - Applied Population Genetics **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**

Fourth Year - Second Semester

- AVS 411 - Advanced Aquaculture **Credits: 3**
- Marine Science Practicum, Group C
- 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**

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 science and math courses required for their major to be considered for admission to the practicum at Eastern Maine Medical Center, Cleveland Clinic, or most other hospitals in their senior year.

Required Course(s) for fulfilling Capstone Experience: BMB 426

Contact Information: Edward Bernard, Program Coordinator, Molecular & Biomedical Sciences, edward.bernard@maine.edu, 207-581-2804

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 in research laboratories. Graduates have high levels of employment and can work across the United States. Medical laboratory sciences students are on campus for three academic years and then spend their senior year in a ten to twelve-month practicum at an accredited school of Medical Laboratory Sciences in a medical center. While students are studying at their practicum location, they follow the policies and procedures for the practicum institution. Students are required to cover all costs associated with attending the practicum. The University of Maine is affiliated with the School of Medical Laboratory Sciences at Northern Light Eastern Maine Medical Center in Bangor, ME, Vanderbilt University Medical Center in Nashville, TN, and the Clinical Laboratory Scientist program at New York Presbyterian Brooklyn Methodist Hospital in Brooklyn, NY. Juniors in the Medical Laboratory Sciences program apply directly to the practicum programs at our affiliated schools 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 science and math courses 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 health check, a criminal background check and a drug test at some practicum schools. After completing the practicum, students are eligible to take the national 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. Other required courses in the major have minimum required grades for pre-requisite courses.

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 (all 4 sets of courses must be completed)

- 1) CHY 121 - General Chemistry I **Credits:** 3
with
- CHY 122 - General Chemistry II **Credits:** 3
- 2) CHY 123 - General Chemistry Laboratory I **Credits:** 1

- with
- CHY 124 - General Chemistry Laboratory II **Credits: 1**
- 3) 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**
- 4) BMB 322 - Biochemistry **Credits: 3**
- with
- BMB 323 - Biochemistry Laboratory **Credits: 2**

Curriculum for the B.S. in Medical Laboratory Sciences

Courses are arranged in the recommended sequence according to their prerequisites. 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 - General Chemistry I **Credits: 3**
- CHY 123 - General Chemistry Laboratory I **Credits: 1**
- ENG 101 - College Composition **Credits: 3**
- MAT 116 - Introduction to Calculus **Credits: 3**
- or
- MAT 122 - Pre-Calculus **Credits: 4**
- or
- MAT 126 - Calculus I **Credits: 4**
- NFA 117 - First-Year Success Seminar **Credits: 1**

First Year - Second Semester

- BIO 208 - Anatomy and Physiology **Credits: 4**
- BMB 280 - Introduction to Molecular and Cellular Biology **Credits: 3**
- CHY 122 - General Chemistry II **Credits: 3**
- CHY 124 - General Chemistry Laboratory II **Credits: 1**
- General Education Requirements Credits: 4

Second 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**
- BMB 300 - General Microbiology **Credits: 3**
- BMB 305 - General Microbiology Laboratory **Credits: 2**
- General Education Requirement Credits: 5 - 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**
- Free Elective Credits: 6

Third Year - First Semester

- BMB 400 - Molecular Genetics **Credits: 3**
- BMB 440 - Introductory Immunology **Credits: 3**
- BMB 441 - Introductory Immunology Laboratory **Credits: 1**
- STS 132 - Principles of Statistical Inference **Credits: 3**
- General Education Requirements or Electives Credits: 3

Third Year - Second Semester

- BMB 405 - Medical Laboratory Methods of Infectious Disease **Credits: 3**
- BMB 406 - Introduction to Medical Laboratory Methods **Credits: 4**
- General Education Requirement Credits: 7

Fourth Year

Students must have completed all of the above course work, all of their General Education requirements, and have earned 88 credit hours before starting their practicum. Fourth year is a practicum in Medical Laboratory Sciences at Northern Light Eastern Maine Medical Center, Cleveland Clinic, New York Presbyterian Brooklyn Methodist Hospital or other accredited program. Practicums typically start in the summer and run 10 to 12 months. Students will graduate in August of the year following the start of their practicum. Credits: 32

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: Melody Neely, Chair, Hitchner Hall Room 360, (207) 581-1513, melody.neely@maine.edu or Ed Bernard, Undergraduate Coordinator, Hitchner Hall, Room 284, (207) 581-2804, edward.bernard@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

- BMB 150 - Phage Genome Discovery I **Credits: 4**
- CHY 121 - General Chemistry I **Credits: 3**
- CHY 123 - General Chemistry Laboratory I **Credits: 1**
- ENG 101 - College Composition **Credits: 3**
- MAT 126 - Calculus I **Credits: 4**

First Year - Second Semester

- BMB 155 - Genome Discovery II: From DNA to Genes **Credits: 3**
- BMB 280 - Introduction to Molecular and Cellular Biology **Credits: 3**
- CHY 122 - General Chemistry II **Credits: 3**
- CHY 124 - General Chemistry Laboratory II **Credits: 1**
- Human Values Social Context/Ethics Elective **Credits: 3**
- Free Elective **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**
- Human Values Social Context/Ethics Elective Credits: 3
- Human Values Social Context/Ethics Elective Credits: 3

Second Year - Second Semester

- BMB 360 - Biochemistry for Molecular and Biomedical Sciences **Credits: 3**
- 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 400-Level Credits: 3
- PHY 111 - General Physics I **Credits: 4**
or
- PHY 121 - Physics for Engineers and Physical Scientists I **Credits: 4**
- Human Values Social Context/Ethics Elective Credits: 3
- Free Elective Credits: 3

Third Year - Second Semester

- BMB 464 - Analytical and Preparative Biochemical Laboratory Methods **Credits: 4**
- BMB 400-level Credits: 3
- PHY 112 - General Physics II **Credits: 4**
or
- PHY 122 - Physics for Engineers and Physical Scientists II **Credits: 4**
- Human Values Social Context/Ethics Elective Credits: 3

Fourth Year - First Semester

- BMB 480 - Seminar in Molecular and Biomedical Sciences **Credits: 1**
- BMB 491 - Biochemistry, Microbiology and Molecular Biology Research **Credits: Ar**
- BMB 400-Level Credits: 3
- Science Elective Credits: 3
- Human Values Social Context/Ethics Elective Credits: 3

Fourth Year - Second Semester

- BMB 480 - Seminar in Molecular and Biomedical Sciences **Credits: 1**
- BMB 491 - Biochemistry, Microbiology and Molecular Biology Research **Credits: Ar**
- Science Elective Credits: 4
- Science Elective Credits: 3
- Free Elective Credits: 3

Science and Program Electives

- AVS 254 - Introduction to Animal Microbiomes **Credits: 3**
 - AVS 437 - Animal Diseases **Credits: 3**
 - BIO 208 - Anatomy and Physiology **Credits: 4**
 - BIO 307 - Interdisciplinary Neuroscience **Credits: 3**
 - BIO 350 - Concepts and Applications of Genetics **Credits: 3**
 - BIO 365 - Fundamentals of Evolution **Credits: 3**
 - BIO 377 - Medical Physiology **Credits: 3**
 - BIO 474 - Neurobiology **Credits: 3**
 - BIO 480 - Cell Biology **Credits: 3**
 - BMB 402 - Introduction to Bioinformatics **Credits: 3**
 - BMB 409 - Applied Microbiology **Credits: 3**
 - BMB 415 - Microbiology of Historical Plagues **Credits: 1**
 - BMB 460 - Advanced Biochemistry **Credits: 3**
 - BMB 467 - Physical Biochemistry **Credits: 3**
 - BMB 491 - Biochemistry, Microbiology and Molecular Biology Research **Credits: Ar ***
 - BMB 497 - Independent Study **Credits: Ar ***
 - CHY 431 - Structure and Mechanism in Biological Chemistry **Credits: 3**
 - COS 220 - Introduction to C++ Programming **Credits: 3**
 - FSN 438 - Food Microbiology **Credits: 3**
 - MAT 127 - Calculus II **Credits: 4**
 - MAT 228 - Calculus III **Credits: 4**
 - PSE 457 - Plant Pathology **Credits: 4**
- *Only 3 credits of *either* BMB 491 or BMB 497 may count toward the Science and Program Elective requirements

BMB 400-Level Electives

Students must take 9 credits of BMB 400-Level Courses. Any courses beyond 9 credits may count for Science & Program Electives.

- BMB 409 - Applied Microbiology **Credits: 3**
- BMB 415 - Microbiology of Historical Plagues **Credits: 1**
- BMB 440 - Introductory Immunology **Credits: 3**
- BMB 455 - Virology **Credits: 3**
- BMB 475 - Virus-Host Cell Interactions Discovery Laboratory **Credits: 3**

Molecular and Biomedical 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: For the Molecular and Biomedical Sciences 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 and Biomedical Sciences major requires a minimum GPA of 2.0 for all required BMB courses and Program Electives.

Required Course(s) for fulfilling Capstone Experience: BMB 491

Contact Information: Melody Neely, Chair, Hitchner Hall Room 117, (207) 581-2810, melody.neely@maine.edu or Ed Bernard, Undergraduate Coordinator, Hitchner Hall, Room 284, (207) 581-2804, edward.bernard@maine.edu

The Molecular and Biomedical Sciences 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 and Biomedical Sciences 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 Biomedical Sciences 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 Biomedical Sciences

Molecular and Biomedical Sciences 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 Biomedical Sciences

First Year - First Semester

- BMB 150 - Phage Genome Discovery I **Credits: 4**
- CHY 121 - General Chemistry I **Credits: 3**
- CHY 123 - General Chemistry Laboratory I **Credits: 1**
- ENG 101 - College Composition **Credits: 3**
- MAT 126 - Calculus I **Credits: 4**

First Year - Second Semester

- BMB 155 - Genome Discovery II: From DNA to Genes **Credits: 3**
- BMB 280 - Introduction to Molecular and Cellular Biology **Credits: 3**
- CHY 122 - General Chemistry II **Credits: 3**
- CHY 124 - General Chemistry Laboratory II **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 360 - Biochemistry for Molecular and Biomedical Sciences **Credits: 3**
- CHY 252 - Organic Chemistry II **Credits: 3**
- CHY 254 - Organic Chemistry Laboratory II **Credits: 2**
- General Education Requirement Credits: 3
- Program Elective Credits: 3

Third Year - First Semester

- BIO 350 - Concepts and Applications of Genetics **Credits: 3**
- BMB 400 - Molecular Genetics **Credits: 3**
- BMB 460 - Advanced Biochemistry **Credits: 3**
- PHY 111 - General Physics I **Credits: 4**
- General Education Requirement Credits: 3

Third Year - Second Semester

- BMB 464 - Analytical and Preparative Biochemical Laboratory Methods **Credits: 4**
- PHY 112 - General Physics II **Credits: 4**
- General Education Requirements Credits: 3
- Free Elective Credits: 4

Fourth Year - First Semester

- BMB 480 - Seminar in Molecular and Biomedical Sciences **Credits: 1**
- BMB 491 - Biochemistry, Microbiology and Molecular Biology Research **Credits: Ar**
- Program Elective Credits: 6
- General Education Requirements Credits: 3
- Free Elective Credits: 3

Fourth Year - Second Semester

- BMB 480 - Seminar in Molecular and Biomedical Sciences **Credits: 1**
- BMB 490 - Molecular Genetics Lab **Credits: 3**
- BMB 491 - Biochemistry, Microbiology and Molecular Biology Research **Credits: Ar**
- Program Elective Credits: 4
- Elective Credits: 3

Science and Program Electives

- AVS 254 - Introduction to Animal Microbiomes **Credits: 3**
- AVS 437 - Animal Diseases **Credits: 3**
- BIO 208 - Anatomy and Physiology **Credits: 4**
- BIO 307 - Interdisciplinary Neuroscience **Credits: 3**

- BIO 365 - Fundamentals of Evolution **Credits: 3**
- BIO 377 - Medical Physiology **Credits: 3**
- BIO 474 - Neurobiology **Credits: 3**
- BIO 480 - Cell Biology **Credits: 3**
- BMB 402 - Introduction to Bioinformatics **Credits: 3**
- BMB 409 - Applied Microbiology **Credits: 3**
- BMB 415 - Microbiology of Historical Plagues **Credits: 1**
- BMB 420 - Infectious Disease **Credits: 3**
- BMB 421 - Infectious Disease Laboratory **Credits: 2**
- BMB 440 - Introductory Immunology **Credits: 3**
- BMB 455 - Virology **Credits: 3**
- BMB 467 - Physical Biochemistry **Credits: 3**
- BMB 491 - Biochemistry, Microbiology and Molecular Biology Research **Credits: Ar ***
- BMB 497 - Independent Study **Credits: Ar ***
- CHY 431 - Structure and Mechanism in Biological Chemistry **Credits: 3**
- COS 220 - Introduction to C++ Programming **Credits: 3**
- MAT 228 - Calculus III **Credits: 4**
- PSE 457 - Plant Pathology **Credits: 4**

*Only 3 credits of *either* BMB 491 or BMB 497 may count toward the Science and Program Elective requirements

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 77% 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 or BMB 300/305.

Required Course(s) for fulfilling Capstone Experience: NUR 447 or NUR 455

Contact Information: Dr. Kelley Strout, Director, 5724 Dunn Hall, (207) 581-2601, kelley.strout@maine.edu

The School of Nursing baccalaureate curriculum provides study in the nursing major as well as in liberal arts, and sciences. 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 approved 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 whitecoats in the first semester of the program. They also 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. Clinical experiences may be Professional liability and health insurance is strongly recommended for all nursing students.

Prior to beginning the first clinical course and before the start of the 4th year 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 misdemeanors that could compromise the care and safety of patients. The healthcare agency makes the determination of the student's suitability for clinical placement.

The School of Nursing has contracted with Kaplan Integrated Testing and NCLEX-RN Review to provide UMaine nursing students with access to resources that support success in nursing school. Kaplan Integrated testing is embedded into NUR courses. Students also gain access to a comprehensive NCLEX-RN course and practice questions at the end of the program. The total cost of the product for 8 semesters of use is \$660. Starting in fall 2020, students will receive a Kaplan fee based on the schedule posted below.

RN Cohorts scheduled to graduate in 8 semesters: \$82.50 per semester

RN Cohorts scheduled to graduate in 7 semesters: \$94.29 per semester

RN Cohorts scheduled to graduate in 6 semesters: \$110.00 per semester

RN Cohorts scheduled to graduate in 5 semesters \$132.00 per semester

RN Cohorts scheduled to graduate in 4 semesters \$165.00 per semester

In addition to purchasing course textbooks, students are required to buy lab kits for NUR, NUR 200 and NUR 301; the lab kits are available in the UMaine bookstore. Course fee: Course fee of \$50.00 per credit hour is assessed on clinical and lab nursing courses. Additional labs costs may be required for each lab course.

The School of Nursing hosts a recognition ceremony on campus for graduating seniors each May and December. The cost of the event is paid for by the graduating class themselves. Cost vary according to the scope and detail of the plans, and average approximately \$2000.00. 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 School of Nursing program, applicants must have completed (or be in-progress at the time of submitting an application) with the following courses: BIO 100, BMB 207, BMB 209, BIO 208 or FSN 101, and ENG 101. A grade of 77.0% (C) or higher in each course is required for admission.

A minimum of a 3.0 science grade point average and a cumulative GPA of 3.0 are required at the time of applying. All prerequisites of the course must have a "C" or better. Students may have no more than 2 repeated STEM courses (this includes withdrawal on their transcript(s).) Students complete the courses that are listed as prerequisites prior to applying to ensure an accurate GPA for cumulative and science. Students are also required to submit an essay. Please refer to the Essay Prompts for submitting a required essay.

Students interested in the nursing major must submit a Change of Major form along with application form and required essay questions which can be found on the School of Nursing web page. 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 which are assessed via the essay. Writing ability is also a consideration. Preference will be given to students who demonstrate that they will be on track toward a timely December graduation.

External transfer: Transfer Nursing applicants are required to submit official transcripts from all colleges and universities they have attended. Applicants with less than 60 transferable college credits must also submit their final High School transcript. Prior to applying, applicants must have completed the following courses, with a grade of C (77% equivalent) or better, that have been evaluated as transfer equivalents for the following UMaine courses.

- BIO100 - Basic Biology with lab - 4 credits
- *BMB207 - Fundamentals of Chemistry - 3 credits
- *BMB209 - Fundamentals of Chemistry Lab - 1 credit
- BIO208 - Anatomy & Physiology with lab - 4 credits or FSN 101 - Introduction to Food & Nutrition - 3 credits
- ENG101 - College Composition - 3 credits

*Please note that CHY 121 and CHY 123 can be used in place of BMB207/209.

Prerequisite courses are preferred to have been completed within 5 years of application to the Nursing program. After 5 years, it is at the discretion of the School of Nursing whether to accept the pre-requisite courses. Nursing applicants will be considered ineligible to apply if they have more than 2 repeated Science, Technology, Engineering or Mathematics (STEM) courses, including withdrawals or if they have attended more than one prior Nursing program and did not meet the Nursing Program's benchmarks for progression.

Please refer to the Essay Prompts for submitting a required essay.

International Students: If the international student is a first-year prospective student, their application will follow the traditional UMaine holistic admissions process through the Admissions Department page. Please refer to the First Year Nursing Application and Essay Prompts for instructions on how to apply.

- All international students are required to complete an English Proficiency Test to be uploaded with their application.
 - Prospective students may take either of these three tests and will be accepted along with their application.
 - Duolingo Cumulative Score 115
 - TOEFL 82 - 86
 - IELTS 6.0

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 admitted, 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.

Pinning

The pinning ceremony is a celebration of our graduating BSN students that is separate from commencement. Students may choose to purchase a University of Maine School of Nursing pin that is emblematic of the program. The cost of the pin varies based on the market values of gold and silver but typically ranges from \$60-\$150 depending on which precious metal and customization a student selects. Participation in the pinning ceremony is encouraged but is not mandatory. Students who choose to participate are charged a \$40 fee to cover the cost of facility rental and programs. Each graduating cohort has the opportunity to fundraise as a means of offsetting the cost to students.

Differential Tuition

A differential tuition fee of \$397 per semester is applied to matriculated nursing student's bills to cover clinical, laboratory, national licensure preparation, and simulation costs. Differential tuition replaces numerous program, course, and laboratory fees. For more information, see costs at UMaine page <https://umaine.edu/stuaid/aid-basics/costs-at-umaine/>

For more information go to the following website: <https://umaine.edu/nursing/undergraduate/admissions/>

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 - General Chemistry I **Credits: 3**
- CHY 123 - General Chemistry Laboratory I **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**

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**
or
- BMB 300 - General Microbiology **Credits: 3**
- BMB 305 - General Microbiology Laboratory **Credits: 2**
- NUR 102 - Foundations of Nursing Practice I **Credits: 2**
- NUR 106 - Foundations of Nursing Practice I LAB **Credits: 0.5**
- Math or General Elective determined by Math Placement Exam **Credits: 3**

Second Year-First Semester

- CHF 201 - Introduction to Child Development **Credits: 3**
Or
- PSY 223 - Psychology of Childhood **Credits: 3**
- NUR 103 - Foundations of Nursing Practice II **Credits: 3**
- NUR 203 - Dosage Calculation for Nurses **Credits: 1**
- PSY 100 - General Psychology **Credits: 3**
- SOC 101 - Introduction to Sociology **Credits: 3**
- STS 132 - Principles of Statistical Inference **Credits: 3**

Second Year-Second Semester

- NUR 200 - Care of Adults I **Credits: 3**
- NUR 201 - Care of Adults I Clinical **Credits: 1.5**
- NUR 202 - Application of Theory to Nursing Practice I **Credits: 1.5**
- NUR 300 - Health Assessment Through the Lifespan **Credits: 3**

- NUR 303 - Pathophysiology **Credits: 3**
- NUR 308 - Health Assessment through the Life Span Lab **Credits: 1**
- Artistic & Creative Expression or Writing Intensive 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: 1.5**
- NUR 306 - Care of Adults II Clinical **Credits: 2**
- NUR 316 - Pharmacology for Nursing Practice **Credits: 3**
- Philosophy Course Credits: 3
- Art or Writing Intensive General Education Credits: 3

Third Year-Second Semester

- NUR 310 - Evidence Based Practice in Healthcare **Credits: 3**
- NUR 340 - Psychiatric Mental Health Nursing **Credits: 3**
- NUR 341 - Clinical Practice in Psychiatric Mental Health Nursing **Credits: 2**
- 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 415 - Socio-Cultural Issues in Health and Health Care **Credits: 3**

Fourth Year-First Semester

- NUR 334 - Care of Adults III **Credits: 3**
- NUR 335 - Care of Adults III Clinical **Credits: 2**
- NUR 416 - Nursing Care Management of Children and Families **Credits: 3**
- NUR 417 - Nursing Care Management of Children and Families Clinical **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: 1**

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: 5**
- NUR 456 - Professional Practice Through the Lifespan **Credits: 3**

Nursing Electives

- NUR 160 - Introduction to Human Genetics and Genomics for Health Care Professions **Credits: 1**
- NUR 165 - Introduction to Care of the Older Adult **Credits: 1**
- NUR 166 - Healthcare Informatics **Credits: 1**
- NUR 419 - Introduction and Service to Global Health **Credits: 3**

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: Candice Goyette, Student Academic Services Coordinator, 201B Nutting Hall, 581-4737, candice.goyette@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 Connecticut, Massachusetts, or Rhode Island for reduced tuition.

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 - 40 credits:

- CMJ 103 - Public Speaking **Credits: 3**
or
- SFR 222 - Environmental Communication Skills **Credits: 3**
- ECO 120 - Principles of Microeconomics **Credits: 3**
- ENG 101 - College Composition **Credits: 3**
- ENG 317 - Business and Technical Writing **Credits: 3**
- MAT 116 - Introduction to Calculus **Credits: 3**
- 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 - Introduction to Forest Land Navigation and Technology **Credits: 2**
- SFR 107 - Forest Vegetation **Credits: 3**
- SFR 228 - Forest Recreation Management **Credits: 3**
- SFR 301 - Field Course in Parks, Recreation and Tourism **Credits: 1**
- SFR 400 - Applied Geographic Information Systems **Credits: 4**
- SFR 479 - Environmental Attitudes and Behaviors **Credits: 3** (even years)
- SFR 480 - Wilderness and Protected Areas Management **Credits: 3** (odd years)

Parks and Recreation Management Concentration requirements - 53-54 credits

- CHY 121 - General Chemistry I **Credits: 3**
and
- CHY 123 - General Chemistry Laboratory I **Credits: 1**
or
- PHY 105 - Descriptive Physics **Credits: 4**
or
- PHY 107 - Technical Physics I **Credits: 4**
or
- PHY 111 - General Physics I **Credits: 4**
or

- PHY 121 - Physics for Engineers and Physical Scientists 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 401 - Timber Harvesting **Credits: 3**
or
- SFR 108 - Introduction to Arboriculture and Community Forestry **Credits: 3**
and
- SFR 109 - Introduction to Arboriculture Lab **Credits: 1**
- SFR 220 - Environment and Society **Credits: 3**
- SFR 226 - Park Systems of the World **Credits: 3**
- SFR 407 - Forest Ecology **Credits: 3**
- SFR 408 - Silviculture **Credits: 3**
- SFR 409 - Forest Ecology and Silviculture Field Laboratory **Credits: 2**
- 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 491 - Senior Capstone in Parks, Recreation and Tourism **Credits: 3**
or
- SFR 492 - Capstone Directed Study **Credits: 1-4** (3 credits required)
- SOC 101 - Introduction to Sociology **Credits: 3**
or
- PSY 100 - General Psychology **Credits: 3**

Nature-Based Tourism Concentration requirements - 60 credits

- Business Course Electives Credits: 6
- ECO 121 - Principles of Macroeconomics **Credits: 3**
- ECO 426 - Regional Economics: Policy and Practice **Credits: 3**
or
- SFR 444 - Forest Resources Economics **Credits: 3**
- ERS 101 - Introduction to Earth Science **Credits: 4**
- PSY 100 - General Psychology **Credits: 3**
- SFR 150 - Introduction to Tourism **Credits: 3**
- SFR 220 - Environment and Society **Credits: 3**
or
- WLE 230 - Introduction to Wildlife Conservation **Credits: 3**
- SFR 226 - Park Systems of the World **Credits: 3**
- SFR 349 - Applied Forest Ecology and Silviculture **Credits: 4**
- SFR 396 - Internship in Parks, Recreation and Tourism **Credits: Ar**
- SFR 437 - Ecotourism: Principles, Trends, and Issues **Credits: 3**
- SFR 452 - Environmental Interpretation **Credits: 4**
- SFR 493 - Sustainable Tourism Planning **Credits: 3**
- STS 215 - Introduction to Statistics for Business and Economics **Credits: 3**
or

- STS 132 - Principles of Statistical Inference **Credits: 3**
- WLE 461 - Human Dimensions of Fisheries and Wildlife Conservation **Credits: 3**
- Directed Electives Credits: 15

Business Electives

Need to be selected from the following list. Other courses can be used with advisor approval.

- ACC 201 - Principles of Financial Accounting **Credits: 3**
- ACC 202 - Principles of Managerial Accounting **Credits: 3**
- ACC 301 - Intermediate Accounting I **Credits: 3**
- ACC 302 - Intermediate Accounting II **Credits: 3**
- ACC 305 - Cost Accounting **Credits: 3**
- ACC 310 - Auditing **Credits: 3**
- ACC 312 - Federal Income Taxation **Credits: 3**
- FIN 350 - Business Finance **Credits: 3**
- MGT 325 - Principles of Management and Organization **Credits: 3**
- MGT 326 - Organizational Behavior **Credits: 3**
- MGT 330 - Human Resource Management **Credits: 3**
- MGT 343 - Introduction to International Business **Credits: 3**
- MKT 270 - Introduction to Marketing **Credits: 3**
- MKT 371 - Services Marketing **Credits: 3**
- MKT 378 - Marketing Research **Credits: 3**
- MKT 382 - Consumer Behavior **Credits: 3**
- Business Elective

Directed Electives (cannot duplicate Business Electives)

Need to be selected from the following list. Other courses can be used with advisor approval.

Business and Economics

- ACC 201 - Principles of Financial Accounting **Credits: 3**
- ACC 202 - Principles of Managerial Accounting **Credits: 3**
- ACC 305 - Cost Accounting **Credits: 3**
- ECO 285 - Economics of Sports **Credits: 3**
- ECO 404 - Behavioral Economics **Credits: 3**
- ECO 427 - Regional Economics: Modeling **Credits: 3**
- FIN 350 - Business Finance **Credits: 3**
- MGT 325 - Principles of Management and Organization **Credits: 3**
- MGT 326 - Organizational Behavior **Credits: 3**
- MGT 330 - Human Resource Management **Credits: 3**
- MGT 343 - Introduction to International Business **Credits: 3**
- MKT 270 - Introduction to Marketing **Credits: 3**
- SPT 355 - Sport Marketing **Credits: 3**
- MKT 371 - Services Marketing **Credits: 3**
- MKT 372 - Integrated Marketing Communication **Credits: 3**

- MKT 374 - Personal Selling and Sales Management **Credits:** 3
- MKT 376 - International Marketing **Credits:** 3
- MKT 378 - Marketing Research **Credits:** 3
- MKT 382 - Consumer Behavior **Credits:** 3
- MKT 476 - New Product Management **Credits:** 3
- MKT 480 - Managerial Marketing **Credits:** 3
- MKT 490 - Special Topics in Marketing **Credits:** 1-3
- SFR 444 - Forest Resources Economics **Credits:** 3

Culture and Society

- 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 270 - Environmental Justice Movements in the United States **Credits:** 3
- ANT 295 - American Indians and Climate Change **Credits:** 3
- ANT 311 - Geography of Climate Change **Credits:** 3
- ANT 410 - Human Dimensions of Climate Change **Credits:** 3
- HTY 211 - Maine and the Sea **Credits:** 3
- HTY 213 - History of the Maine Woods **Credits:** 3
- HTY 222 - Maine Indian History in the Twentieth Century **Credits:** 3
- HTY 480 - Global Environmental History **Credits:** 3
- INA 101 - Introduction to International Affairs **Credits:** 3
- PSY 230 - Social Psychology **Credits:** 3
- PSY 232 - Environmental Psychology **Credits:** 3
- PSY 251 - Psychology of Motivation **Credits:** 3
- SOC 290 - Research Methods in Sociology **Credits:** 3

Natural Resources, Management, and Policy

- ECO 377 - Environmental Economics and Policy **Credits:** 3
- ECO 381 - SL: Sustainability Science, Policy, and Action **Credits:** 3
- ECO 405 - SL: Sustainable Energy Economics & Policy **Credits:** 3
- EES 140 - Soil Science **Credits:** 3
- EES 324 - Environmental Protection Law and Policy **Credits:** 3
- EES 489 - Critical Issues in Ecology and Environmental Sciences **Credits:** 4
- SFR 446 - Forest Resources Policy **Credits:** 3
- SMS 110 - Concepts in Oceanography **Credits:** 3
- WLE 200 - Ecology **Credits:** 3
- WLE 230 - Introduction to Wildlife Conservation **Credits:** 3
- WLE 323 - Introduction to Conservation Biology **Credits:** 3
- WLE 410 - Wildlife Population Dynamics and Conservation **Credits:** 3
- WLE 461 - Human Dimensions of Fisheries and Wildlife Conservation **Credits:** 3
- WLE 470 - Wildlife Policy and Administration **Credits:** 3
- WLE 479 - Wildlife Conservation in a Changing World **Credits:** 3

Recreation, Health, and Others

- KPE 209 - Wilderness First Responder **Credits: 3**
- KPE 253 - Lifetime Fitness for Health **Credits: 3**
- KPE 265 - Outdoor and Adventure Activities **Credits: 3**
- KPE 271 - Professional Dispositions and Research in Physical and Health Education **Credits: 3**
- KPE 280 - Introduction to Paddling Instruction and Safety **Credits: 3**
- KPE 286 - Introduction to Outdoor Leadership and Facilitation **Credits: 1**
- KPE 311 - Advanced Methods of Instructing Outdoor Activities **Credits: 3**

Conservation Law Enforcement Concentration requirement - 54 credits

- CHY 121 - General Chemistry I **Credits: 3**
and
- CHY 123 - General Chemistry Laboratory I **Credits: 1**
or
- ERS 101 - Introduction to Earth Science **Credits: 4**
or
- ERS 102 - Environmental Geology **Credits: 4**
or
- PHY 105 - Descriptive Physics **Credits: 4**
or
- PHY 107 - Technical Physics I **Credits: 4**
or
- PHY 111 - General Physics I **Credits: 4**
- PHY 121 - Physics for Engineers and Physical Scientists I **Credits: 4**
- PSY 100 - General Psychology **Credits: 3**
- SFR 205 - Forest Measurements and Statistics **Credits: 3**
or
- STS 215 - Introduction to Statistics for Business and Economics **Credits: 3**
or
- STS 132 - Principles of Statistical Inference **Credits: 3**
- SFR 150 - Introduction to Tourism **Credits: 3**
or
- SFR 226 - Park Systems of the World **Credits: 3**
- SFR 220 - Environment and Society **Credits: 3**
or
- EES 100 - Human Population and the Global Environment **Credits: 3**
or
- WLE 230 - Introduction to Wildlife Conservation **Credits: 3**
- SFR 349 - Applied Forest Ecology and Silviculture **Credits: 4**
- SFR 452 - Environmental Interpretation **Credits: 4**
- SFR 434 - Recreation Site Planning and Management **Credits: 3**
- SFR 444 - Forest Resources Economics **Credits: 3**
or
- SFR 446 - Forest Resources Policy **Credits: 3**
or
- EES 324 - Environmental Protection Law and Policy **Credits: 3**

- SFR 491 - Senior Capstone in Parks, Recreation and Tourism **Credits: 3**
or
- SFR 492 - Capstone Directed Study **Credits: 1-4** (3 credits required)
- SOC 101 - Introduction to Sociology **Credits: 3**
- WLE 323 - Introduction to Conservation Biology **Credits: 3**
or
- WLE 431 - Wildlife Management in Forestry **Credits: 3**

Criminology Electives - 9 credits

Need to be selected from the following list. Other courses can be used with advisor approval.

- POS 282 - Introduction to American Law **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**
- PSY 230 - Social Psychology **Credits: 3**
- SOC 214 - Crime and Criminal Justice **Credits: 3**
- SOC 240 - Topics in Sociology **Credits: 1-3**
- SOC 308 - Problems of Violence and Terrorism **Credits: 3**
- CRJ 314 - Law and Society **Credits: 3**
- SOC 337 - Sociology of Mental Illness **Credits: 3**

Conservation Electives - 6 credits

Need to be selected from the following list. Other courses can be used with advisor approval.

- ANT 250 - Conservation Anthropology: The Socio-Cultural Dimension of Environmental Issues **Credits: 3**
- ECO 377 - Environmental Economics and Policy **Credits: 3**
- ECO 105 - Environmental Policy **Credits: 3**
- SFR 457 - Tree Pests and Disease **Credits: 3**
- SFR 458 - Tree Pests and Disease Lab **Credits: 1**
- SMS 230 - Introduction to Marine Policy and Fisheries Management **Credits: 3**
- WLE 431 - Wildlife Management in Forestry **Credits: 3**

Individualized Concentration requirement - 50 credits

- CHY 121 - General Chemistry I **Credits: 3**
and
- CHY 123 - General Chemistry Laboratory I **Credits: 1**
or
- PHY 105 - Descriptive Physics **Credits: 4**
or
- PHY 107 - Technical Physics I **Credits: 4**
or
- PHY 111 - General Physics I **Credits: 4**
or

- PHY 121 - Physics for Engineers and Physical Scientists I **Credits: 4**
- PSY 100 - General Psychology **Credits: 3**
- SFR 205 - Forest Measurements and Statistics **Credits: 3**
or
- STS 215 - Introduction to Statistics for Business and Economics **Credits: 3**
or
- STS 132 - Principles of Statistical Inference **Credits: 3**
- SFR 220 - Environment and Society **Credits: 3**
or
- WLE 230 - Introduction to Wildlife Conservation **Credits: 3**
- SFR 349 - Applied Forest Ecology and Silviculture **Credits: 4**
- SFR 444 - Forest Resources Economics **Credits: 3**
or
- SFR 446 - Forest Resources Policy **Credits: 3**
or
- EES 324 - Environmental Protection Law and Policy **Credits: 3**
- SFR 491 - Senior Capstone in Parks, Recreation and Tourism **Credits: 3**
or
- SFR 492 - Capstone Directed Study **Credits: 1-4**
- SOC 101 - Introduction to Sociology **Credits: 3**

Parks, Recreation, and Tourism electives: 9 credits

Choose 3 of the following courses:

- SFR 150 - Introduction to Tourism **Credits: 3**
- SFR 226 - Park Systems of the World **Credits: 3**
- SFR 434 - Recreation Site Planning and Management **Credits: 3**
- SFR 437 - Ecotourism: Principles, Trends, and Issues **Credits: 3**
- SFR 444 - Forest Resources Economics **Credits: 3**
- SFR 446 - Forest Resources Policy **Credits: 3**
- SFR 452 - Environmental Interpretation **Credits: 4**
- SFR 493 - Sustainable Tourism Planning **Credits: 3**

Individualized Electives - 18 credits

Used to satisfy a minor or individualized plan approved by advisor.

General Elective Courses - 20-27 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 Artistic and Creative Expression Requirement.

Required Courses in Suggested Sequence for the B.S. in Parks, Recreation and Tourism

Concentration in Parks and Recreation Management

First Year - First Semester

- MAT 116 - Introduction to Calculus **Credits: 3**
- SFR 101 - Introduction to Forest Resources **Credits: 1**
- SFR 103 - Introduction to Forest Resource Professions **Credits: 1**
- SFR 106 - Introduction to Forest Land Navigation and Technology **Credits: 2**
- SFR 107 - Forest Vegetation **Credits: 3**
- SFR 220 - Environment and Society **Credits: 3**
- SFR 226 - Park Systems of the World **Credits: 3**

First Year - Second Semester

- ENG 101 - College Composition **Credits: 3**
- SFR 150 - Introduction to Tourism **Credits: 3**
- SFR 205 - Forest Measurements and Statistics **Credits: 3**
- SFR 222 - Environmental Communication Skills **Credits: 3**
or
- CMJ 103 - Public Speaking **Credits: 3**
- PSY 100 - General Psychology **Credits: 3**
or
- SOC 101 - Introduction to Sociology **Credits: 3**

Second Year - First Semester

- CHY 121 - General Chemistry I **Credits: 3**
and
- CHY 123 - General Chemistry Laboratory I **Credits: 1**
or
- PHY 105 - Descriptive Physics **Credits: 4**
or
- PHY 107 - Technical Physics I **Credits: 4**
or
- PHY 111 - General Physics I **Credits: 4**
or
- PHY 121 - Physics for Engineers and Physical Scientists I **Credits: 4**
- 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 228 - Forest Recreation Management **Credits: 3**

Second Year - Second Semester

- EES 140 - Soil Science **Credits: 3**
- SFR 400 - Applied Geographic Information Systems **Credits: 4**
- SFR 480 - Wilderness and Protected Areas Management **Credits: 3**
- General Education Elective in Creative and Artistic Expression Credits: 3

Second Year - Summer Term

- SFR 301 - Field Course in Parks, Recreation and Tourism **Credits: 1**

Third Year - First Semester

- SFR 108 - Introduction to Arboriculture and Community Forestry **Credits: 3**
and
- SFR 109 - Introduction to Arboriculture Lab **Credits: 1**
or
- SFR 401 - Timber Harvesting **Credits: 3**
- SFR 407 - Forest Ecology **Credits: 3**
- SFR 408 - Silviculture **Credits: 3**
- SFR 409 - Forest Ecology and Silviculture Field Laboratory **Credits: 2**
- Elective Course Credits: 3

Third Year - Second Semester

- ENG 317 - Business and Technical Writing **Credits: 3**
- SFR 446 - Forest Resources Policy **Credits: 3**
- SFR 458 - Tree Pests and Disease Lab **Credits: 1**
- SFR 479 - Environmental Attitudes and Behaviors **Credits: 3**
- Elective Course Credits: 6

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**
- Elective Course Credits: 6

Fourth Year - Second Semester

- SFR 464 - Forest Resources Business, Marketing and Entrepreneurship **Credits: 3**
- SFR 491 - Senior Capstone in Parks, Recreation and Tourism **Credits: 3**
or
- SFR 492 - Capstone Directed Study **Credits: 1-4** (see footnote 1)
- Elective Course Credits: 8-9

Footnote

¹SFR 492 can be taken over 1 or 2 semesters, 1 to 4 credits per semester with advisor approval. A minimum of 3 credits is needed for graduation, and a maximum of 4 credits can be earned.

Concentration in Nature Based Tourism

First Year - First Semester

- MAT 116 - Introduction to Calculus **Credits: 3**
- SFR 101 - Introduction to Forest Resources **Credits: 1**
- SFR 103 - Introduction to Forest Resource Professions **Credits: 1**
- SFR 106 - Introduction to Forest Land Navigation and Technology **Credits: 2**
- SFR 107 - Forest Vegetation **Credits: 3**
- SFR 220 - Environment and Society **Credits: 3**
- SFR 226 - Park Systems of the World **Credits: 3**
or
- Elective

First Year - Second Semester

- 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**
- SFR 150 - Introduction to Tourism **Credits: 3**
- SFR 222 - Environmental Communication Skills **Credits: 3**

Second Year - First Semester

- ECO 121 - Principles of Macroeconomics **Credits: 3**
- ERS 101 - Introduction to Earth Science **Credits: 4**
- SFR 226 - Park Systems of the World **Credits: 3**
- SFR 228 - Forest Recreation Management **Credits: 3**
- Business course Elective Credits: 3

Second Year - Second Semester

- PSY 100 - General Psychology **Credits: 3**
- SFR 400 - Applied Geographic Information Systems **Credits: 4**
- STS 215 - Introduction to Statistics for Business and Economics **Credits: 3**
or
- STS 132 - Principles of Statistical Inference **Credits: 3**
- General Education Elective in Creative and Artistic Expression Credits: 3
- Business Course Elective Credits: 3

Second Year - Summer Term

- SFR 301 - Field Course in Parks, Recreation and Tourism **Credits: 1**
- SFR 396 - Internship in Parks, Recreation and Tourism **Credits: Ar**

Third Year - First Semester

- SFR 349 - Applied Forest Ecology and Silviculture **Credits: 4**
- SFR 452 - Environmental Interpretation **Credits: 4**
or
- Directed Elective
- ECO 426 - Regional Economics: Policy and Practice **Credits: 3**
or
- SFR 444 - Forest Resources Economics **Credits: 3**
or
- SFR 544 - Forest Resource Economics Credits: 3
- WLE 461 - Human Dimensions of Fisheries and Wildlife Conservation **Credits: 3**

Third Year - Second Semester

- ENG 317 - Business and Technical Writing **Credits: 3**
- SFR 437 - Ecotourism: Principles, Trends, and Issues **Credits: 3**
- SFR 479 - Environmental Attitudes and Behaviors **Credits: 3** (even year)
or
- SFR 480 - Wilderness and Protected Areas Management **Credits: 3** (odd yr)
- Directed Electives Credits: 6

Fourth Year - First Semester

- SFR 452 - Environmental Interpretation **Credits: 4**
- SFR 493 - Sustainable Tourism Planning **Credits: 3**
- Elective and General Education Courses: Ethics course if needed Credits: 8

Fourth Year - Second Semester

- SFR 479 - Environmental Attitudes and Behaviors **Credits: 3** (even yr)
or
- SFR 480 - Wilderness and Protected Areas Management **Credits: 3** (odd yr)
- Directed Elective Credits: 3
- Elective & General Education Courses Credits: 6

Concentration in Conservation Law Enforcement

First Year - First Semester

- ENG 101 - College Composition **Credits: 3**
- MAT 116 - Introduction to Calculus **Credits: 3**
- SFR 101 - Introduction to Forest Resources **Credits: 1**
- SFR 103 - Introduction to Forest Resource Professions **Credits: 1**
- SFR 106 - Introduction to Forest Land Navigation and Technology **Credits: 2**
- SFR 107 - Forest Vegetation **Credits: 3**
- SFR 220 - Environment and Society **Credits: 3**

- or
- EES 100 - Human Population and the Global Environment **Credits: 3**
- or
- WLE 230 - Introduction to Wildlife Conservation **Credits: 3**

First Year - Second Semester

- ECO 120 - Principles of Microeconomics **Credits: 3**
- PSY 100 - General Psychology **Credits: 3**
- SOC 101 - Introduction to Sociology **Credits: 3**
- SFR 205 - Forest Measurements and Statistics **Credits: 3**
- or
- STS 215 - Introduction to Statistics for Business and Economics **Credits: 3**
- or
- STS 132 - Principles of Statistical Inference **Credits: 3**
- SFR 222 - Environmental Communication Skills **Credits: 3**
- or
- CMJ 103 - Public Speaking **Credits: 3**

Second Year - First Semester

- SFR 100 - Introduction to Forest Biology **Credits: 3**
- SFR 102 - Structure and Function of Woody Plants Laboratory **Credits: 1**
- SFR 228 - Forest Recreation Management **Credits: 3**
- Criminology Elective Credits: 3
- Elective Course Credits: 6

Second Year - Second Semester

- CHY 121 - General Chemistry I **Credits: 3**
- and
- CHY 123 - General Chemistry Laboratory I **Credits: 1**
- or
- ERS 101 - Introduction to Earth Science **Credits: 4**
- or
- ERS 102 - Environmental Geology **Credits: 4**
- or
- PHY 105 - Descriptive Physics **Credits: 4**
- or
- PHY 107 - Technical Physics I **Credits: 4**
- or
- PHY 111 - General Physics I **Credits: 4**
- or
- PHY 121 - Physics for Engineers and Physical Scientists I **Credits: 4**
- SFR 150 - Introduction to Tourism **Credits: 3**
- or
- SFR 226 - Park Systems of the World **Credits: 3**
- SFR 400 - Applied Geographic Information Systems **Credits: 4**

- Criminology Elective Credits: 3

Second Year - Summer Term

- SFR 301 - Field Course in Parks, Recreation and Tourism **Credits: 1**

Third Year - First Semester

- EES 324 - Environmental Protection Law and Policy **Credits: 3**
or
- SFR 444 - Forest Resources Economics **Credits: 3**
or
- SFR 446 - Forest Resources Policy **Credits: 3**
- SFR 349 - Applied Forest Ecology and Silviculture **Credits: 4**
- SFR 434 - Recreation Site Planning and Management **Credits: 3**
- WLE 323 - Introduction to Conservation Biology **Credits: 3**
or
- WLE 431 - Wildlife Management in Forestry **Credits: 3** (spring)
- Criminology Elective Credits: 3

Third Year - Second Semester

- ENG 317 - Business and Technical Writing **Credits: 3**
- SFR 479 - Environmental Attitudes and Behaviors **Credits: 3**
- Conservation Elective Credits: 6

Fourth Year - First Semester

- SFR 452 - Environmental Interpretation **Credits: 4**
- SFR 444 - Forest Resources Economics **Credits: 3**
- Conservation Elective Credits: 3
- Elective Course Credits: 6

Fourth Year - Second Semester

- 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: 1-4** (See Footnote 1)
- Elective Course Credits: 8

Footnotes

¹SFR 492 can be taken over 1 or 2 semesters, 1 to 4 credits per semester with advisor approval. A minimum of 3 credits is needed for graduation, and a maximum of 4 credits can be earned.

Individualized Concentration

First Year - First Semester

- ENG 101 - College Composition **Credits: 3**
- MAT 116 - Introduction to Calculus **Credits: 3**
- SFR 101 - Introduction to Forest Resources **Credits: 1**
- SFR 103 - Introduction to Forest Resource Professions **Credits: 1**
- SFR 106 - Introduction to Forest Land Navigation and Technology **Credits: 2**
- SFR 107 - Forest Vegetation **Credits: 3**
- SFR 220 - Environment and Society **Credits: 3**
- or
- WLE 230 - Introduction to Wildlife Conservation **Credits: 3**

First Year - Second Semester

- ECO 120 - Principles of Microeconomics **Credits: 3**
- SFR 205 - Forest Measurements and Statistics **Credits: 3**
- or
- STS 215 - Introduction to Statistics for Business and Economics **Credits: 3**
- or
- STS 132 - Principles of Statistical Inference **Credits: 3**
- SFR 222 - Environmental Communication Skills **Credits: 3**
- or
- CMJ 103 - Public Speaking **Credits: 3**
- PSY 100 - General Psychology **Credits: 3**
- SOC 101 - Introduction to Sociology **Credits: 3**

Second Year -First Semester

- SFR 100 - Introduction to Forest Biology **Credits: 3**
- SFR 102 - Structure and Function of Woody Plants Laboratory **Credits: 1**
- SFR 228 - Forest Recreation Management **Credits: 3**
- First Individualized Elective: Credits 3 (see footnote1)
- Elective course: Credits 6

Second Year - Second Semester

- CHY 121 - General Chemistry I **Credits: 3**
- and
- CHY 123 - General Chemistry Laboratory I **Credits: 1**
- or
- ERS 101 - Introduction to Earth Science **Credits: 4**
- or
- PHY 105 - Descriptive Physics **Credits: 4**
- or
- PHY 107 - Technical Physics I **Credits: 4**

- or
- PHY 111 - General Physics I **Credits: 4**
- or
- PHY 121 - Physics for Engineers and Physical Scientists I **Credits: 4**
- SFR 400 - Applied Geographic Information Systems **Credits: 4**
- First PRT Elective Credits: 3 (see footnote 2)
- Elective Credits: 3

Second Year - May Term

- SFR 301 - Field Course in Parks, Recreation and Tourism **Credits: 1**

Third Year - First Semester

- EES 324 - Environmental Protection Law and Policy **Credits: 3**
- or
- SFR 444 - Forest Resources Economics **Credits: 3**
- or
- SFR 446 - Forest Resources Policy **Credits: 3**
- Second PRT Elective Credits: 3 (see footnote 2)
- Second Individualized Elective Credits: 3 (see footnote 1)
- Elective Credits: 3

Third Year - Second Semester

- ENG 317 - Business and Technical Writing **Credits: 3**
- SFR 479 - Environmental Attitudes and Behaviors **Credits: 3** (even years)
- Third Individualized Elective Credits: 3 (see footnote 1)
- Elective Course Credits: 6

Fourth Year - First Semester

- SFR 349 - Applied Forest Ecology and Silviculture **Credits: 4**
- Third PRT Elective Credits: 3 (see footnote 2)
- Fourth and fifth Individualized electives Credits: 6 (see footnote 1)
- Elective Credits: 3

Fourth Year - Second Semester

- 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: 1-4** (see footnote 3)
- Sixth Individualized Elective Credits: 3 (see footnote 1)
- Elective Course Credits: 3

Footnotes

Footnote 1

Used to satisfy a minor or individualized plan approved by advisor. 18 credits required.

Footnote 2

PRT Electives: Choose 3 of the following. 9 credits required

- SFR 150 - Introduction to Tourism **Credits: 3**
- SFR 226 - Park Systems of the World **Credits: 3**
- SFR 434 - Recreation Site Planning and Management **Credits: 3**
- SFR 437 - Ecotourism: Principles, Trends, and Issues **Credits: 3**
- SFR 444 - Forest Resources Economics **Credits: 3**
- SFR 446 - Forest Resources Policy **Credits: 3**
- SFR 452 - Environmental Interpretation **Credits: 4**
- SFR 493 - Sustainable Tourism Planning **Credits: 3**

Footnote 3

SFR 492 can be taken over 1 or 2 semesters, 1 to 4 credits per semester with advisor approval. A minimum of 3 credits is needed for graduation, and a maximum of 4 credits can be earned.

Note

Any student who receives a semester GPA of less than 2.0 or receives a Conduct Violation must meet the 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: 2.0

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 2.0 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 201 - Strategies for Writing Across Contexts **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 132 - 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**
(Students should take SWK 395 for 3 credits for both 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**
(Students should take SWK 495 for 3 credits for both 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 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: C- or higher is required for EES 140/141 and all required PSE courses.

Other GPA requirements to graduate: None.

Required Course(s) for fulfilling Capstone Experience: PSE 430

Contact Information: Charlene Gray, SAG Program Coordinator, 102 Deering Hall, (207) 581-2948, charlene.gray@maine.edu

The Bachelor of Science in Sustainable Agriculture, offered by the School of Food and Agriculture, is built upon fundamental knowledge of ecological and biological systems as applied to agricultural production. The program is designed for students interested in working in the growing field of ecologically-based agriculture in areas of production, research and education. The BS degree in Sustainable Agriculture can also be used as preparation for postgraduate study in a variety of disciplines.

The Sustainable Agriculture degree program emphasizes: how to build soil health 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 profitable, diversified agriculture that is stable through market and weather fluctuations.

BS in Sustainable Agriculture (120 credits)

Required Plant, Soil, and Environmental Science Courses (48 credits)

Science and Mathematics Courses (35 credits)

Economic Courses (3 credits)

English/Communication Courses (9 credits)

Human Values and Social Context Courses (9 credits)

Ethics Course (3 credits)

NFA 117 -First Year Success Seminar (1 credit)

General Elective Courses (12 credits)

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 Sustainable Agriculture from other programs or institutions must have a 2.0 grade point average or above.

Required Courses in Suggested Sequence for the BS in Sustainable Agriculture

First Year - First Semester

- AVS 145 - Introduction to Animal Science **Credits:** 3
- BIO 100 - Basic Biology **Credits:** 4
- NFA 117 - First-Year Success Seminar **Credits:** 1
- PSE 100 - Plant Science **Credits:** 4

- PSE 105 - Principles of Sustainable Agriculture **Credits:** 3

First Year - Second Semester

- ENG 101 - College Composition **Credits:** 3
- FSN 101 - Introduction to Food and Nutrition **Credits:** 3
- MAT 116 - Introduction to Calculus **Credits:** 3
- Short Course Credits: 1 (see footnote 1)
- 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 - General Chemistry I **Credits:** 3
- CHY 123 - General Chemistry Laboratory I **Credits:** 1
- PSE 215 - Vegetable and Fruit Production **Credits:** 3
- STS 132 - Principles of Statistical Inference **Credits:** 3
- WLE 200 - Ecology **Credits:** 3
or
- BIO 319 - General Ecology **Credits:** 3 (Spring)
- General Education Western Cultural Tradition Credits: 3

Second Year - Second Semester

- BMB 208 - Elementary Physiological Chemistry **Credits:** 3
- BMB 210 - Elementary Physiological Chemistry Laboratory **Credits:** 1
or
- CHY 122 - General Chemistry II **Credits:** 3
- CHY 124 - General Chemistry Laboratory II **Credits:** 1
- CMJ 102 - Fundamentals of Interpersonal Communication **Credits:** 3
or
- CMJ 103 - Public Speaking **Credits:** 3
- ECO 154 - Small Business Economics and Management **Credits:** 3
- EES 140 - Soil Science **Credits:** 3
- EES 141 - Soil Science Laboratory **Credits:** 1
- Short Course Credits: 1 (see footnote 1)

Summer

- PSE 396 - Field Experience in Plant, Soil and Environmental Sciences **Credits:** 1 - 16
1 credit is required for this course.

Third Year - First Semester

- BIO 327 - Introductory Applied Entomology **Credits: 4**
- PHI 232 - Environmental Ethics **Credits: 3**
or
- General Education: Ethics Credits: 3
- PSE 203 - Weed Biology and Identification **Credits: 1**
- PSE 312 - Sustainable Food Systems: Challenges and Opportunities **Credits: 3**
- Short Course Credits: 1 (see footnote 1)
- General Elective Credits: 3

Third Year - Second Semester

- PSE 410 - Plant Propagation **Credits: 4**
- PSE 415 - Greenhouse Management **Credits: 4**
- General Education Artistic and Creative Expressions Credits: 3
- General Elective Credits: 4

Fourth Year - First Semester

- BIO 452 - Plant Physiology **Credits: 3**
- PSE 360 - Agroecology and Sustainable Cropping Systems **Credits: 4**
- PSE 403 - Weed Ecology and Management **Credits: 3**
- PSE 457 - Plant Pathology **Credits: 4**
- Short Course Credits: 1 (see footnote 1)

Fourth Year - Second Semester

- ENG 315 - Research Writing in the Disciplines **Credits: 3**
or
- ENG 317 - Business and Technical Writing **Credits: 3**
- PSE 430 - SL: Sustainable Horticulture and Agriculture Capstone **Credits: 3**
- PSE 440 - Environmental Soil Chemistry and Plant Nutrition **Credits: 3**
- General Electives Credits: 3
- General Electives Credits: 3

Short Course Options

Choose at least 4 credits in this section

- AVS 267 - Swine Production **Credits: 1**
- AVS 268 - Pasture Poultry Production **Credits: 1**
- BIO 453 - Plant Physiology Laboratory **Credits: 1**
- PSE 261 - Nutrient Management **Credits: 1**
- PSE 262 - Introduction to Cannabis Cultivation and Science **Credits: 1**
- PSE 263 - Plant Health Diagnostics **Credits: 1**
- PSE 264 - Introduction to Composting **Credits: 1**
- PSE 265 - Soil Health for Farm Resilience and Climate Mitigation **Credits: 1**
- PSE 266 - Small Fruit and Berry Production **Credits: 1**
- PSE 269 - So You Want to Farm in Maine **Credits: 1**
- PSE 270 - Wild Blueberry Production **Credits: 1**

Sustainable Food Systems

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 each of the courses required for the major and in all concentration courses.

Other GPA requirements to graduate: None.

Courses satisfying the writing intensive requirement within the major: FSN 425

Required Course(s) for fulfilling Capstone Experience: PSE 430 SL: Sustainable Horticulture and Agriculture Capstone or Honors thesis

Contact Information: Eileen Molloy, Undergraduate Program Coordinator, 111 Hitchner Hall, (207) 581-3121, eileen.molloy@maine.edu.

Climate Change and Food Systems Concentration

Climate change poses significant and urgent challenges to food systems. The *Climate Change and Food Systems* concentration focuses on how climate change affects and is affected by food systems, and how we can both use agriculture to mitigate environmental change while simultaneously adapting to it. Students who complete this concentration will learn about the primary and secondary effects of climate change, and will become well-versed in adaptation and risk-mitigation frameworks. These bodies of knowledge will prepare them to succeed in a wide variety of food system related careers. Because climate change affects all parts of the food system, these skills will be highly sought after in a range of sectors including agricultural production, processing, distribution, municipal and community planning and advocacy, policy and program development, and more.

Food Processing and Innovation Concentration

How we eat and develop new and healthful foods is a career trajectory with the potential to positively affect people across the country and the globe. In this interdisciplinary concentration, students will become well-versed in the skills needed to pursue careers in food processing and innovation. A science-based curriculum will encompass the technical aspects of food science, while sociological courses will address the policy and cultural environments in which food science is practiced. Graduates can look forward to careers in the food industry with a focus on new food product development and marketing.

Justice, Equity, and Community Development Concentration

Pervasive inequality in society demands that new professionals in food systems careers are knowledgeable and proficient when it comes to justice and equity. Community programs developed through these lenses are in high demand. Students enrolled in this concentration will become well versed in elements of policy, economics, and culture that lead to unequal and unjust social outcomes, and will develop the skills they need to change these outcomes in their communities and future organizations. Career options in community development can include directing programs that impact food security in the U.S. Examples abound, such as the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), the National School Lunch Program, or the Supplemental Nutrition Assistance Program (SNAP)

Leadership and Management Concentration

Food is at the center of society, and this program will train students who will become the future leaders in food system organizations, businesses, and movements. Through this concentration, students will become well-versed in the ethics of leadership and management, and learn how to apply these ethical standards to business and community development as they pertain to food systems. Coursework will train students to be communicators, to be knowledgeable about world cultures, and

aware of policies that affect food domestically and internationally. The U.S. Department of Agriculture, the Food and Drug Administration, or the Department of Health and Human Services are examples of organizations where graduates can assume leadership roles.

Plant and Animal Production Systems Concentration

Food production is at the heart of food systems. In this concentration, students will learn about integrated crop and livestock systems at local, regional, national, and global scales. Critical analysis of these agricultural systems will instruct students about the most promising methods to decrease the ecological harm while contributing to vibrant food production. This concentration provides the opportunity to study both animal and crop production, and equips students for future careers in farming, agricultural advising, research, and policy.

Individualized Concentration in Sustainable Food Systems

Students may also opt to develop their own individualized concentration in Sustainable Food Systems. Working with a faculty mentor, the student will be able to choose within the broad selection of courses available within the degree. Students who wish to pursue this option will have a specific set of skills unique for their chosen career path. Working with a faculty mentor, the student will prepare a narrative explaining the organizing concept for the concentration, name, and required classes.

Summary of Graduation Requirements

To obtain this degree students must meet the requirements of the University, those requirements specific to the major and the requirements for the concentration.

Sustainable Food Systems Major

1. Satisfy General Education requirements
2. Satisfy Bachelor of Science requirements
3. NFA 117 First-Year Success Seminar
4. Biology requirement: BIO 100
5. Sustainable Food Systems core class requirements: ECO 190; FSN 101, 270, 425, 436; PSE 105, 312, 430
6. Social Sciences requirements: ANT 212, 225, ECO 120, and SOC 101
7. Quantitative requirements: MAT 115 and STS 132 or STS 215
8. Communication and Leadership Skills: ENG 101, LBR 200, LDR 100 and two of the following CMJ 102, 103, 107

Climate Change and Food Systems Concentration

1. Satisfy the core requirement of the degree program
2. Satisfy Bachelor of Science requirements
3. Plant, Soil, and Environmental Sciences requirements: PSE 105, 312, 360
4. Ecology and Environmental Sciences/Earth and Climate Sciences requirements: EES 100 or ERS 121 and EES 140
5. Other requirements: ANT 410, ECO 105 and ECO 180
6. Electives: Choose at least 12 credits in this section with at least 9 credits from the 300+ level

Food Processing and Innovation Concentration

1. Satisfy the core requirement of the degree program
2. Satisfy Bachelor of Science requirements
3. Food Science and Human Nutrition requirements: FSN 103, 104, 238, 330, 340
4. Chemistry requirement: BMB 207
5. Other requirements: INV 121
6. Electives: Choose at least 18 credits in this section, with at least 9 credits from the 300+ level

Justice, Equity, and Community Development Concentration

1. Satisfy the core requirement of the degree program
2. Satisfy Bachelor of Science requirements
3. Social Sciences requirements: ANT 102; PAX 370; PHI 100; SOC 201; SWK 320, 440
4. Electives: Choose at least 18 credits in this section, with at least 9 credits from the 300+ level

Leadership and Management Concentration

1. Satisfy the core requirement of the degree program
2. Satisfy Bachelor of Science requirements
3. Leadership skills and Management requirements: LDR 200, 220, 330; MGT 325
4. Other requirements: PHI 233 and PSY 100
5. Electives: Choose at least 18 credits in this section, with at least 9 credits from the 300+ level:

Plant and Animal Production Systems Concentration

1. Satisfy the core requirement of the degree program
2. Satisfy Bachelor of Science requirements
3. Chemistry requirements: CHY 121 and 123
4. Animal and Veterinary requirements: AVS 145, 146, and 211
5. Plant, Soil, and Environmental Sciences requirements: PSE 100, 105, and 360
6. Other requirements: EES 140 and EES 141
7. Electives; Choose at least 12 credits in this section, with at least 9 credits from the 300+ level

Individualized Concentration in Sustainable Food Systems

1. Satisfy the core requirement of the degree program
2. Satisfy Bachelor of Science requirements
3. Grades of C- or higher in all of the courses required for the major and in all concentration courses
4. Individualized concentrations must be distinct from an established concentration and all other degree programs at UMaine. Individualized concentrations must include at least 36 credit hours of coursework, at least 18 of which are at the 300 or 400 course level. An individualized concentration must be approved by the student's academic advisor, the SFS Undergraduate Coordinator, and the SFA Associate Director.

Required Courses in Suggested Sequence for the B.S. in Sustainable Food Systems

Climate Change and Food Systems Concentration

First Year - First Semester

- BIO 100 - Basic Biology **Credits: 4**
- EES 100 - Human Population and the Global Environment **Credits: 3**
or
- ERS 121 - Humans and Global Change **Credits: 3**
- ENG 101 - College Composition **Credits: 3**
- NFA 117 - First-Year Success Seminar **Credits: 1**
- PSE 105 - Principles of Sustainable Agriculture **Credits: 3**

First Year - Second Semester

- ECO 190 - World Food Supply, Population and the Environment **Credits: 3**
- FSN 101 - Introduction to Food and Nutrition **Credits: 3**
- LDR 100 - Foundations of Leadership **Credits: 3**
- MAT 115 - Applied Mathematics for Business and Economics **Credits: 3**
- SOC 101 - Introduction to Sociology **Credits: 3**

Second Year - First Semester

- ANT 212 - The Anthropology of Food **Credits: 3**
- CMJ 102 - Fundamentals of Interpersonal Communication **Credits: 3**
or
- CMJ 103 - Public Speaking **Credits: 3**
or
- CMJ 107 - Communication and the Environment **Credits: 3**
- ECO 105 - Environmental Policy **Credits: 3**
- ECO 120 - Principles of Microeconomics **Credits: 3**
- Artistic and Creative Expression Gen Ed Credits: 3

Second Year - Second Semester

- ECO 180 - Citizens, Energy & Sustainability **Credits: 3**
- EES 140 - Soil Science **Credits: 3**
- LBR 200 - Information Literacy **Credits: 3**
- STS 132 - Principles of Statistical Inference **Credits: 3**
or
- STS 215 - Introduction to Statistics for Business and Economics **Credits: 3**
- Concentration Elective Credits: 3

Third Year - First Semester

- ANT 225 - Climate Change, Societies and Cultures **Credits: 3**
Second CMJ course:
- CMJ 102 - Fundamentals of Interpersonal Communication **Credits: 3**
or
- CMJ 103 - Public Speaking **Credits: 3**
or
- CMJ 107 - Communication and the Environment **Credits: 3**
- PSE 312 - Sustainable Food Systems: Challenges and Opportunities **Credits: 3**
- PSE 360 - Agroecology and Sustainable Cropping Systems **Credits: 4**
- General Education: Western Cultural Tradition Credits: 3

Third Year - Second Semester

Fourth Year - First Semester

- FSN 270 - World Food and Culture **Credits: 3**
- FSN 425 - Contemporary Issues in the Food Industry **Credits: 1**
- Concentration Elective 300+ level Credits: 3
- General Electives Credits: 9

Fourth Year - Second Semester

- ANT 410 - Human Dimensions of Climate Change **Credits: 3**

- FSN 436 - Food Laws and Regulations **Credits: 3**
- PSE 430 - SL: Sustainable Horticulture and Agriculture Capstone **Credits: 3**
- General Electives Credits: 6

Climate Change and Food Systems Concentration Electives

Choose at least 12 credits in this section with at least 9 credits from the 300+ level:

- 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 311 - Geography of Climate Change **Credits: 3**
- AVS 477 - Zoonoses and Animal Health **Credits: 3**
- CIE 210 - Sustainability in Engineering **Credits: 3**
- CMJ 407 - SL -Environmental Communication **Credits: 3**
- EES 351 - Energy, Wealth, and Power: a Biophysical Systems view of Nature and Society **Credits: 3**
- EES 398 - Special Seminar In Ecology and Environmental Science **Credits: 1-3**
- ERS 201 - Global Environmental Change **Credits: 4**
- HTY 480 - Global Environmental History **Credits: 3**
- PHI 232 - Environmental Ethics **Credits: 3**
- PHI 432 - Environmental Justice **Credits: 3**
- PSE 440 - Environmental Soil Chemistry and Plant Nutrition **Credits: 3**
- SFR 220 - Environment and Society **Credits: 3**
- SFR 455 - Bioenergy Sources, Systems and Environmental Effects **Credits: 3**
- SMS 230 - Introduction to Marine Policy and Fisheries Management **Credits: 3**
- WLE 200 - Ecology **Credits: 3**
- WLE 323 - Introduction to Conservation Biology **Credits: 3**

Required Courses in Suggested Sequence for the B.S. in Sustainable Food Systems

Food Processing and Innovation Concentration

First Year - First Semester

- BIO 100 - Basic Biology **Credits: 4**
- FSN 101 - Introduction to Food and Nutrition **Credits: 3**
- INV 121 - Fundamentals of Innovation **Credits: 3**
- NFA 117 - First-Year Success Seminar **Credits: 1**
- PSE 105 - Principles of Sustainable Agriculture **Credits: 3**

First Year - Second Semester

- ECO 190 - World Food Supply, Population and the Environment **Credits: 3**
- ENG 101 - College Composition **Credits: 3**
- FSN 103 - Science of Food Preparation **Credits: 3**
- FSN 104 - Science of Food Preparation Lab **Credits: 1**
- MAT 115 - Applied Mathematics for Business and Economics **Credits: 3**

- SOC 101 - Introduction to Sociology **Credits: 3**

Second Year - First Semester

- BMB 207 - Fundamentals of Chemistry **Credits: 3**
- FSN 202 - Foodservice Management **Credits: 3**
- FSN 330 - Introduction to Food Science **Credits: 3**
- FSN 340 - Food Processing Laboratory **Credits: 1**
- LDR 100 - Foundations of Leadership **Credits: 3**
- General Elective Credits: 3

Second Year - Second Semester

- ANT 212 - The Anthropology of Food **Credits: 3**
- CMJ 102 - Fundamentals of Interpersonal Communication **Credits: 3**
or
- CMJ 103 - Public Speaking **Credits: 3**
or
- CMJ 107 - Communication and the Environment **Credits: 3**
- STS 132 - Principles of Statistical Inference **Credits: 3**
or
- STS 215 - Introduction to Statistics for Business and Economics **Credits: 3**
- Concentration Elective Credits: 3
- General Elective Credits: 3

Third Year - First Semester

- ANT 225 - Climate Change, Societies and Cultures **Credits: 3**
Second CMJ course:
- CMJ 102 - Fundamentals of Interpersonal Communication **Credits: 3**
or
- CMJ 103 - Public Speaking **Credits: 3**
or
- CMJ 107 - Communication and the Environment **Credits: 3**
- LBR 200 - Information Literacy **Credits: 3**
- PSE 312 - Sustainable Food Systems: Challenges and Opportunities **Credits: 3**
- General Elective Credits: 3

Third Year - Second Semester

- ECO 120 - Principles of Microeconomics **Credits: 3**
- Concentration Elective Credits: 3
- Concentration Elective 300+ level Credits: 6
- General Education: Western Cultural Tradition Credits: 3

Fourth Year - First Semester

- FSN 270 - World Food and Culture **Credits: 3**
- FSN 425 - Contemporary Issues in the Food Industry **Credits: 1**
- Concentration Elective Credits: 3
- Concentration Elective 300+ level Credits: 3
- General Electives Credits: 6

Fourth Year - Second Semester

- FSN 436 - Food Laws and Regulations **Credits: 3**
- PSE 430 - SL: Sustainable Horticulture and Agriculture Capstone **Credits: 3**
- General Electives Credits: 7

Food Processing and Innovation Concentration Electives

Choose at least 18 credits in this section, with at least 9 credits from the 300+ level:

- ECO 154 - Small Business Economics and Management **Credits: 3**
- ECO 391 - Introduction to Growth and Development **Credits: 3**
- ECO 488 - Spreadsheet Modeling and Decision Analysis **Credits: 3**
- INV 180 - Create: Innovation Engineering I **Credits: 3**
- INV 282 - Advanced Innovation Skills **Credits: 4**
- INV 392 - Commercialize: Innovation Engineering III **Credits: 3**
- INV 405 - Innovation Leadership **Credits: 4**
- FSN 121 - Brewing with Food Science **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 450 - Food Biotechnology **Credits: 3**
- FSN 475 - Sensory Evaluation Laboratory **Credits: 1**
- FSN 485 - Introduction to Food Engineering Principles **Credits: 3**
- FSN 486 - Food Engineering Laboratory **Credits: 1**
- FSN 585 Principles of Sensory Evaluation Credits: 3
- MKT 476 - New Product Management **Credits: 3**
- NMD 100 - Introduction to New Media **Credits: 3**
- NMD 104 - New Media Design **Credits: 3**

Required Courses in Suggested Sequence for the B.S. in Sustainable Food Systems

Justice, Equity and Community Development Concentration

First Year - First Semester

- BIO 100 - Basic Biology **Credits: 4**
- FSN 101 - Introduction to Food and Nutrition **Credits: 3**
- NFA 117 - First-Year Success Seminar **Credits: 1**

- PSE 105 - Principles of Sustainable Agriculture **Credits: 3**
- SOC 101 - Introduction to Sociology **Credits: 3**

First Year- Second Semester

- ANT 102 - Introduction to Anthropology: Diversity of Cultures **Credits: 3**
- ANT 212 - The Anthropology of Food **Credits: 3**
- ECO 190 - World Food Supply, Population and the Environment **Credits: 3**
- ENG 101 - College Composition **Credits: 3**
- MAT 115 - Applied Mathematics for Business and Economics **Credits: 3**

Second Year - First Semester

- LDR 100 - Foundations of Leadership **Credits: 3**
- PAX 370 - Building Sustainable Communities **Credits: 3**
- PHI 100 - Contemporary Moral Problems **Credits: 3**
- SOC 201 - Social Inequality **Credits: 3**
- General Elective Credits: 3

Second Year - Second Semester

- CMJ 102 - Fundamentals of Interpersonal Communication **Credits: 3**
or
- CMJ 103 - Public Speaking **Credits: 3**
or
- CMJ 107 - Communication and the Environment **Credits: 3**
- STS 132 - Principles of Statistical Inference **Credits: 3**
or
- STS 215 - Introduction to Statistics for Business and Economics **Credits: 3**
- SWK 320 - Introduction to Social Work **Credits: 3**
- Concentration Elective Credits: 3
- Artistic and Creative Expression Gen Ed Credits: 3

Third Year - First Semester

- ANT 225 - Climate Change, Societies and Cultures **Credits: 3**
Second CMJ course:
- CMJ 102 - Fundamentals of Interpersonal Communication **Credits: 3**
or
- CMJ 103 - Public Speaking **Credits: 3**
or
- CMJ 107 - Communication and the Environment **Credits: 3**
- LBR 200 - Information Literacy **Credits: 3**
- PSE 312 - Sustainable Food Systems: Challenges and Opportunities **Credits: 3**
- General Elective Credits: 3

Third Year - Second Semester

- ECO 120 - Principles of Microeconomics **Credits: 3**
- SWK 440 - Social Welfare Policy and Issues **Credits: 3**
- Concentration Elective Credits: 3
- Concentration Elective 300+ level Credits: 3
- General Electives Credits: 3

Fourth Year - First Semester

- FSN 270 - World Food and Culture **Credits: 3**
- FSN 425 - Contemporary Issues in the Food Industry **Credits: 1**
- Concentration Elective Credits: 3
- Concentration Elective 300+ level Credits: 3
- General Electives Credits: 6

Fourth Year - Second Semester

- FSN 436 - Food Laws and Regulations **Credits: 3**
- PSE 430 - SL: Sustainable Horticulture and Agriculture Capstone **Credits: 3**
- Concentration Elective 300+ level Credits: 3
- General Elective Credits: 6

Justice, Equity and Community Development Concentration

Choose at least 18 credits in this section, with at least 9 credits from the 300+ level:

- ANT 256 - Ethnic Conflict **Credits: 3**
- ANT 270 - Environmental Justice Movements in the United States **Credits: 3**
- ANT 430 - Who Owns Native Cultures? **Credits: 3**
- ANT 466 - Economic Anthropology **Credits: 3**
- AVS 254 - Introduction to Animal Microbiomes **Credits: 3**
- CMJ 347 - Argument and Critical Thinking **Credits: 3**
- CMJ 420 - SL: Health Communication **Credits: 3**
- CMJ 425 - SL: Health Campaigns **Credits: 3**
- DIS 300 - Disability: Interaction of Human Diversity and Global Environment **Credits: 3**
- DIS 400 - Disability as Diversity I **Credits: 3**
- ECO 121 - Principles of Macroeconomics **Credits: 3**
- ECO 180 - Citizens, Energy & Sustainability **Credits: 3**
- ECO 381 - SL: Sustainability Science, Policy, and Action **Credits: 3**
- FSN 265 - Application of Nutrition Principles **Credits: 3**
- HTY 365 - The American Immigrant Experience **Credits: 3**
- HTY 477 - The American Worker **Credits: 3**
- MGT 331 - Labor-Management Relations **Credits: 3**
- NAS 101 - Introduction to Native American Studies **Credits: 3**
- PHI 344 - Theories of Justice **Credits: 3**
- PHI 345 - Global Justice **Credits: 3**

- POS 100 - American Government **Credits: 3**
- POS 384 - American Civil Liberties **Credits: 3**
- PSY 230 - Social Psychology **Credits: 3**
- WGS 101 - Introduction to Women's, Gender, and Sexuality Studies **Credits: 3**

Required Courses in Suggested Sequence for the B.S. in Sustainable Food Systems

Leadership and Management Concentration

First Year - First Semester

- BIO 100 - Basic Biology **Credits: 4**
- FSN 101 - Introduction to Food and Nutrition **Credits: 3**
- LDR 100 - Foundations of Leadership **Credits: 3**
- NFA 117 - First-Year Success Seminar **Credits: 1**
- PSE 105 - Principles of Sustainable Agriculture **Credits: 3**

First Year- Second Semester

- ECO 190 - World Food Supply, Population and the Environment **Credits: 3**
- ENG 101 - College Composition **Credits: 3**
- LDR 200 - Leadership Ethics **Credits: 3**
- MAT 115 - Applied Mathematics for Business and Economics **Credits: 3**
- SOC 101 - Introduction to Sociology **Credits: 3**

Second Year - First Semester

- ANT 212 - The Anthropology of Food **Credits: 3**
- LDR 220 - Leadership and Social Movements **Credits: 3**
- PSY 100 - General Psychology **Credits: 3**
- Concentration Elective Credits: 3
- General Elective Credits: 3

Second Year - Second Semester

- CMJ 102 - Fundamentals of Interpersonal Communication **Credits: 3**
or
- CMJ 103 - Public Speaking **Credits: 3**
or
- CMJ 107 - Communication and the Environment **Credits: 3**
- LDR 330 - Crisis Leadership and Decision Making **Credits: 3**
- PHI 233 - Business Ethics **Credits: 3**
- STS 132 - Principles of Statistical Inference **Credits: 3**
or
- STS 215 - Introduction to Statistics for Business and Economics **Credits: 3**
- Artistic and Creative Expression Gen Ed Credits: 3

Third Year - First Semester

- ANT 225 - Climate Change, Societies and Cultures **Credits: 3**
Second CMJ course:
- CMJ 102 - Fundamentals of Interpersonal Communication **Credits: 3**
or
- CMJ 103 - Public Speaking **Credits: 3**
or
- CMJ 107 - Communication and the Environment **Credits: 3**
- ECO 120 - Principles of Microeconomics **Credits: 3**
- PSE 312 - Sustainable Food Systems: Challenges and Opportunities **Credits: 3**
- General Elective Credit: 3

Third Year - Second Semester

- LBR 200 - Information Literacy **Credits: 3**
- MGT 325 - Principles of Management and Organization **Credits: 3**
- Concentration Elective Credits: 3
- Concentration Elective 300+ level Credits: 3
- General Education: Western Cultural Tradition Credits: 3

Fourth Year - First Semester

- FSN 270 - World Food and Culture **Credits: 3**
- FSN 425 - Contemporary Issues in the Food Industry **Credits: 1**
- Concentration Elective Credits: 3
- Concentration Elective 300+ level Credits: 3
- General Electives Credits: 6

Fourth Year - Second Semester

- FSN 436 - Food Laws and Regulations **Credits: 3**
- PSE 430 - SL: Sustainable Horticulture and Agriculture Capstone **Credits: 3**
- Concentration Elective 300+ level Credits: 3
- General Electives Credits: 6

Leadership and Management Concentration Electives

Choose at least 18 credits in this section, with at least 9 credits from the 300+ level:

- ANT 466 - Economic Anthropology **Credits: 3**
- CMJ 257 - Business and Professional Communication **Credits: 3**
- CMJ 367 - Public Relations **Credits: 3**
- ECO 154 - Small Business Economics and Management **Credits: 3**
- ENG 317 - Business and Technical Writing **Credits: 3**
- ENG 415 - Advanced Report & Proposal Writing **Credits: 3**
- HTY 477 - The American Worker **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**
- MGT 326 - Organizational Behavior **Credits: 3**
- MGT 330 - Human Resource Management **Credits: 3**
- MGT 331 - Labor-Management Relations **Credits: 3**
- MGT 342 - Small Business Management **Credits: 3**
- PAX 451 - Mediation: Its Premises, Practices and Policies **Credits: 3**
- PSY 230 - Social Psychology **Credits: 3**
- PSY 251 - Psychology of Motivation **Credits: 3**

Required Courses in Suggested Sequence for the B.S. in Sustainable Food Systems

Plant and Animal Production Systems Concentration

First Year - First Semester

- BIO 100 - Basic Biology **Credits: 4**
- LDR 100 - Foundations of Leadership **Credits: 3**
- NFA 117 - First-Year Success Seminar **Credits: 1**
- PSE 100 - Plant Science **Credits: 4**
- PSE 105 - Principles of Sustainable Agriculture **Credits: 3**

First Year- Second Semester

- ECO 190 - World Food Supply, Population and the Environment **Credits: 3**
- ENG 101 - College Composition **Credits: 3**
- FSN 101 - Introduction to Food and Nutrition **Credits: 3**
- MAT 115 - Applied Mathematics for Business and Economics **Credits: 3**
- SOC 101 - Introduction to Sociology **Credits: 3**

Second Year - First Semester

- AVS 145 - Introduction to Animal Science **Credits: 3**
- AVS 146 - Introduction to Animal Science Laboratory **Credits: 1**
- AVS 211 - Introduction to Aquaculture **Credits: 3**
- CHY 121 - General Chemistry I **Credits: 3**
- CHY 123 - General Chemistry Laboratory I **Credits: 1**
- PSE 312 - Sustainable Food Systems: Challenges and Opportunities **Credits: 3**

Second Year - Second Semester

- CMJ 102 - Fundamentals of Interpersonal Communication **Credits: 3**
or
- CMJ 103 - Public Speaking **Credits: 3**
or

- CMJ 107 - Communication and the Environment **Credits: 3**
- EES 140 - Soil Science **Credits: 3**
- EES 141 - Soil Science Laboratory **Credits: 1**
- STS 132 - Principles of Statistical Inference **Credits: 3**
or
- STS 215 - Introduction to Statistics for Business and Economics **Credits: 3**
- Artistic and Creative Expression Gen Ed. Credits: 3
- General Elective Credits: 3

Third Year - First Semester

- ANT 212 - The Anthropology of Food **Credits: 3**
- ANT 225 - Climate Change, Societies and Cultures **Credits: 3**
Second CMJ course:
- CMJ 102 - Fundamentals of Interpersonal Communication **Credits: 3**
or
- CMJ 103 - Public Speaking **Credits: 3**
or
- CMJ 107 - Communication and the Environment **Credits: 3**
- ECO 120 - Principles of Microeconomics **Credits: 3**
- PSE 360 - Agroecology and Sustainable Cropping Systems **Credits: 4**

Third Year - Second Semester

- LBR 200 - Information Literacy **Credits: 3**
- Concentration Elective Credits: 3
- Concentration Elective 300+ level Credits: 3
- General Education Western Cultural Traditions Credits: 3
- General Elective Credits: 3

Fourth Year - First Semester

- FSN 270 - World Food and Culture **Credits: 3**
- FSN 425 - Contemporary Issues in the Food Industry **Credits: 1**
- Concentration Elective 300+ level Credits: 3
- General Electives Credits: 8

Fourth Year - Second Semester

- FSN 436 - Food Laws and Regulations **Credits: 3**
- PSE 430 - SL: Sustainable Horticulture and Agriculture Capstone **Credits: 3**
- Concentration Elective 300+ level Credits: 3
- General Elective Credits: 5

Plant and Animal Production Systems Concentration Electives

Choose at least 12 credits in this section, with at least 9 credits from the 300+ level:

- AVS 254 - Introduction to Animal Microbiomes **Credits: 3**
- AVS 267 - Swine Production **Credits: 1**
- AVS 268 - Pasture Poultry Production **Credits: 1**
- AVS 346 - Dairy Cattle Technology **Credits: 3**
- AVS 347 - Dairy Cattle Technology Laboratory **Credits: 2**
- AVS 371 - University Dairy Cooperative **Credits: 4**
- AVS 411 - Advanced Aquaculture **Credits: 3**
- AVS 446 - Forage Science and Range Management **Credits: 3**
- BIO 310 - Plant Biology **Credits: 4**
- BIO 327 - Introductory Applied Entomology **Credits: 4**
- BIO 432 - Biology of the Fungi **Credits: 4**
- BIO 464 - Taxonomy of Vascular Plants **Credits: 4**
- ECO 154 - Small Business Economics and Management **Credits: 3**
- PSE 203 - Weed Biology and Identification **Credits: 1**
- PSE 215 - Vegetable and Fruit Production **Credits: 3**
- PSE 261 - Nutrient Management **Credits: 1**
- PSE 262 - Introduction to Cannabis Cultivation and Science **Credits: 1**
- PSE 263 - Plant Health Diagnostics **Credits: 1**
- PSE 264 - Introduction to Composting **Credits: 1**
- PSE 265 - Soil Health for Farm Resilience and Climate Mitigation **Credits: 1**
- PSE 266 - Small Fruit and Berry Production **Credits: 1**
- PSE 269 - So You Want to Farm in Maine **Credits: 1**
- PSE 396 - Field Experience in Plant, Soil and Environmental Sciences **Credits: 1 - 16**
- PSE 403 - Weed Ecology and Management **Credits: 3**
- PSE 410 - Plant Propagation **Credits: 4**
- PSE 415 - Greenhouse Management **Credits: 4**
- PSE 457 - Plant Pathology **Credits: 4**
- SMS 230 - Introduction to Marine Policy and Fisheries Management **Credits: 3**
- SMS 449 - Aquaculture Systems **Credits: 3**

Sustainable Materials and Technology

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: Candice Goyette, Student Academic Services Coordinator, 201B Nutting Hall, 581-4737, candice.goyette@maine.edu

The Bachelor of Science in Sustainable Materials and Technology (SMT) involves multiple academic disciplines and aims to produce professionals with strong abilities to assess and communicate the technical foundations of how forest and other plant-based materials can be sustainably produced and converted for a variety of applications ranging from traditional wood products to emerging sustainable materials and bioenergy systems throughout the entire life-cycle of the products.

Renewable and sustainable feed stocks will increasingly be used to meet societal demands for materials ranging from traditional applications in construction and paper to packaging, composites, electronics, textiles, plastics, and bioenergy development. This change is rooted in benefits of using sustainably grown renewable materials, which can replace non-renewable materials produced from petroleum and mining sources. Benefits of this rapidly emerging 21st century circular bioeconomy include positive contribution to climate change mitigation attributable to the take-up of CO₂ from the atmosphere inherent in the growing of trees and plants, lower embodied energy attained from the production of bio-based products, less dependency on fossil fuel-based energy due to the supplementary bioenergy and the co-location of manufacturing enterprises with human communities which provide local jobs and a beneficial environment.

The SMT program outcomes provide a holistic approach to the understanding and application of concepts necessary for product design and the conversion of renewable feed stocks to a wide variety of materials and products. Graduates of the program will gain a mastery of a broad set of skills necessary for success in this broad and rapidly evolving field. The skill areas include fundamentals of wood and plant growth and properties, quantification of sustainability and certification, supply-chain analysis, fundamentals of materials science and technology, principles of converting wood and other renewable materials to building materials, composites, packaging materials, and bioplastics as well as bioenergy, business concepts including market awareness, techno-economics, and statistics, along with key "soft-skills" in communications, team-building, critical thinking, and innovation.

The SMT program combines rigorous academic content with a focus on experiential learning through a series of directed laboratory experiences in world-class facilities such as UMaine's world-famous Advanced Structures and Composites Center (ASCC), the Forest Bioproducts Research Institute (FBRI), several cutting-edge research laboratories at the School of Forest Resources, internship requirements, involvement of industry, governmental, and non-governmental organization (NGO) partners, as well as field activities.

The Sustainable Materials and Technology (SMT) program is accredited by the Society of Wood Science and Technology (SWST).

The Sustainable Materials and Technology (SMT) program at the University of Maine has been developed in response to the need to educate and train necessary workforce for the state and beyond and builds upon the long-lasting reputation of the University of Maine in sustainability related disciplines. Maine's vibrant sustainable materials industry in combination with large areas of forestland near the University provide additional opportunities for a field-based and industry oriented education. Students are strongly encouraged to take advantage of the numerous opportunities for summer employment with the bioproducts industry. Students in the Sustainable Materials and Technology (SMT) program have an opportunity to study, interact, and often

work with the large number and diverse group of graduate students from around the world who have been attracted to sustainable materials-related studies at the University of Maine. The SMT faculty have active externally funded 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.

Graduates of the SMT program are prepared for careers in the administration and supervision of sustainable material processing facilities. Specific career areas include: mill supervision and quality control; sustainable material business/marketing, new product development, life-cycle analysis, and sustainable material procurement. Opportunities also exist for graduate education at both the M.S. and Ph.D. levels in the newly developed graduate concentration in Bioproducts Engineering.

The SMT program is part of the School of Forest Resources. The School of Forest Resources has the largest scholarship endowment fund on campus for an academic unit, where the School awarded over \$500,000 for the 2020-2021 academic year to help support undergraduate studies. Some scholarships are specifically available for students in the Sustainable Materials and Technology (SMT) program.

Under the New England Regional Student Program, administered through the New England Board of Higher Education, the Bachelor of Science in Sustainable Materials and Technology (SMT) is open to applicants who reside in Connecticut, Massachusetts, Rhode Island, New Hampshire, or Vermont for reduced tuition.

The BS in Sustainable Materials and Technology (SMT) curriculum requires completion of 120 credits of coursework. Recognizing the significance of the sustainable materials industries to society, as well as the opportunities for professional employment of highly trained and broadly educated college graduates, the SMT program is designed to provide students with relevant and marketable knowledge and proficiencies in subject areas essential to the conduct of sustainable materials production and applications.

Required Courses in Suggested Sequence for the B.S. in Sustainable Materials and Technology (SMT)

First Year - First Semester -16 Credits

- ENG 101 - College Composition **Credits:** 3
- MAT 122 - Pre-Calculus **Credits:** 4
- NFA 117 - First-Year Success Seminar **Credits:** 1
- PHY 107 - Technical Physics I **Credits:** 4
- SFR 120 - Understanding Wood **Credits:** 1
- Elective and General Education Courses Credit: 3

First Year - Second Semester - 14 credits

- MAT 126 - Calculus I **Credits:** 4
- SFR 100 - Introduction to Forest Biology **Credits:** 3
- SFR 102 - Structure and Function of Woody Plants Laboratory **Credits:** 1
- SFR 215 - Introduction to Sustainable Materials and Technology **Credits:** 3
- Elective/General Education Requirements Credits: 3

Second Year - First Semester - 16 credits

- CHY 121 - General Chemistry I **Credits:** 3
- CHY 123 - General Chemistry Laboratory I **Credits:** 1

- CIE 110 - Materials **Credits: 3**
- CIE 111 - Materials Laboratory **Credits: 1**
- MAT 127 - Calculus II **Credits: 4**
- SFR 216 - Wood Identification **Credits: 1**
- Elective/General Education Requirements **Credits: 3**

Second Year - Second Semester - 15 credits

- CHY 122 - General Chemistry II **Credits: 3**
- CMJ 103 - Public Speaking **Credits: 3**²
- ECO 120 - Principles of Microeconomics **Credits: 3**¹
- MEE 252 - Statics and Strength of Materials **Credits: 3**³
- Elective **Credits: 3**

¹ Satisfies the General Education Social Contexts and Institutions Requirement.

² Satisfies the General Education Social Contexts and Institutions Requirement.

³CET 413 - Statics and Strength of Materials is an acceptable alternative.

Third Year - First Semester - 14 credits

- BMB 221 - Organic Chemistry **Credits: 3**
- ENG 315 - Research Writing in the Disciplines **Credits: 3**
- **or**
- ENG 317 - Business and Technical Writing **Credits: 3**
- SFR 450 - Processing of Biomaterials **Credits: 4**
- SFR 456 - Physical and Mechanical Properties of Sustainable Materials **Credits: 4**

Third Year - Second Semester - 17 credits

- ACC 201 - Principles of Financial Accounting **Credits: 3**
- SFR 453 - Biocomposite Materials **Credits: 4**
- SFR 455 - Bioenergy Sources, Systems and Environmental Effects **Credits: 3**¹
- SFR 460 - Sustainable Materials and Technology Manufacturing Tour **Credits: 1**
- Elective **Credits: 3**
- Technical Elective **Credits: 3**

¹Satisfies the General Education Population and Environment Requirement.

Fourth Year - First Semester - 14 credits

- SFR 395 - Internship for Sustainable Materials and Technology **Credits: Ar**
- SFR 492 - Capstone Directed Study **Credits: 1-4**²
(SFR 492 can be taken over 1 or 2 semesters, 1 to 4 credits per semester with advisor approval. A minimum of 3 credits is needed for graduation.)
- STS 215 - Introduction to Statistics for Business and Economics **Credits: 3**
- **or**
- STS 132 - Principles of Statistical Inference **Credits: 3**

- Elective Credits: 4
- Technical Electives Credits: 3

²Satisfies the General Education Writing Intensive and Capstone Experience Requirements.

Fourth Year - Second Semester - 14 Credits

- CET 412 - Sustainable Population and Environmental Design and Construction **Credits: 3** ^{3,4}
- SFR 464 - Forest Resources Business, Marketing and Entrepreneurship **Credits: 3**
- SFR 492 - Capstone Directed Study **Credits: 1-4**
(SFR 492 can be taken over 1 or 2 semesters, 1 to 4 credits per semester with advisor approval. A minimum of 3 credits is needed for graduation.)
- Technical Elective Credits: 6

³Satisfies the Population and Environment and Ethics General Education Requirements.

⁴CIE 210 - Sustainability in Engineering is an acceptable alternative.

Technical Electives

The student, in consultation with their advisor, will select 12 credits from the following list of courses.

Engineering Technology Courses

- CET 414 - Structural Design **Credits: 4**
- MET 121 - Technical Drawing **Credits: 3**
- MET 150 - Statics **Credits: 3**
- **or**
- MEE 150 - Applied Mechanics: Statics **Credits: 3**
- MET 219 - Strength of Materials **Credits: 3**
- MET 355 - Engineering Materials **Credits: 3**
- MET 440 - Lean Six Sigma **Credits: 3**

Mathematics or Statistics Course

- MAT 228 - Calculus III **Credits: 4**
- STS 437 - Statistical Methods in Research **Credits: 3**

Wood Materials Graduate Courses

- SFR 545 - Adhesion and Adhesives Technology Credits: 3
- SFR 550 - Wood Polymer Hybrid Composites Credits: 3
- SFR 530 - Wood Physics Credits: 3
- SFR 531 - Mechanics of Wood and Wood Composites Credits: 3
- SFR 570 - Cellulose Nanomaterials and Their Composites Credits: 3

Business Courses (Possibility to pursue Business Minor with approval form advisor)

- FIN 350 - Business Finance **Credits: 3**
- MGT 325 - Principles of Management and Organization **Credits: 3**
- MKT 270 - Introduction to Marketing **Credits: 3**
- MGT 337 - Production and Operations Management **Credits: 3**
- PSY 100 - General Psychology **Credits: 3**

Innovation Engineering Courses

- INV 101 - Exploring Innovation **Credits: 1**
- INV 180 - Create: Innovation Engineering I **Credits: 3**
- INV 282 - Advanced Innovation Skills **Credits: 4**
- INV 392 - Commercialize: Innovation Engineering III **Credits: 3**

Bioenergy Related Courses

- ECO 180 - Citizens, Energy & Sustainability **Credits: 3**
- ECO 405 - SL: Sustainable Energy Economics & Policy **Credits: 3**
- ECO 477 - Natural Resource Economics and Policy **Credits: 3**
- EES 324 - Environmental Protection Law and Policy **Credits: 3**
- EES 351 - Energy, Wealth, and Power: a Biophysical Systems view of Nature and Society **Credits: 3**
- MEE 480 - Wind Energy Engineering **Credits: 3**
- MEE 230 - Thermodynamics I **Credits: 3**
- **or**
- MET 433 - Thermodynamics **Credits: 3**

Other Courses

- CHE 410 - Advanced Materials **Credits: 3**
- CHE 430 - Introduction to Polymer Science and Technology **Credits: 3**
- CHY 477 - Nanoscience **Credits: 3**
- FSN 330 - Introduction to Food Science **Credits: 3**
- MEE 320 - Materials Engineering and Science **Credits: 3**
- PPA 264 - Introduction to the Pulp and Paper Industry **Credits: 3**

Note:

Any student who receives a semester GPA of less than 2.0 or receives a Conduct Violation must meet with the 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 her/his 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.

Wildlife Ecology

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: Grade of C or better in MAT 122 or MAT 116, or a C- in MAT 126, and Grade of C- in WLE 200 and WLE 201 or SMS 300 or BIO 319 needed to progress to WLE 220. Grade of C- or better in WLE 220 to progress to WLE 250.

Other GPA requirements to graduate: None

Required Course(s) for fulfilling Capstone Experience: Complete one of the following courses meeting general education requirements for a Capstone course: WLE 455 (Wildlife Habitat Evaluation, must be taken concurrently to WLE 450), WLE 457 (Ecology and Management of Game Birds), or HON 499 (Honors Thesis Research).

or

Students may enroll in 3 credits of WLE 490 (Special Problems) with a faculty mentor and complete an independent research project. The requirements of the independent study (e.g. written paper, presentations) should be agreed upon between the student and faculty mentor, and approval from the student's academic advisor and undergraduate coordinator should be secured during the semester prior to the capstone being completed (e.g. during fall semester for a spring graduation). With this alternative, a degree exception form will need to be completed and submitted by the student's academic adviser.

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 allows students to meet certification requirements of the American Fisheries Society. The Wildlife Ecology curriculum plus a concentration in Wildlife Science and Management qualifies students to meet professional certification requirements of The Wildlife Society.

Requirements for BS in Wildlife Ecology

Graduates must complete 120 credits including:

1. Satisfy general education requirements.

2. Complete all courses listed in the curriculum for the B.S. in Wildlife Ecology.
3. Complete a Concentration or an alternative approved area of specialization (see below)

Requirements for internal transfer students to Wildlife Ecology

For internal transfer students from other academic programs at UMaine, students must have a minimum of a 2.5 cumulative GPA and demonstrated success of a "C" or better in BIO 100 and a "C" or better in MAT 122 or MAT 116, or a C- in MAT 126.

Also Recommended

Field Experience in the profession, either through a paid or volunteer position or internship.

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**
Or
- MAT 116 - Introduction to Calculus **Credits: 3**
- 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 - Public Speaking **Credits: 3**
Or
- CMJ 107 - Communication and the Environment **Credits: 3**

- 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**

- CHY 121 - General Chemistry I **Credits: 3**

- CHY 123 - General Chemistry Laboratory I **Credits: 1**
Or
- PHY 111 - General Physics I **Credits: 4**

- WLE 200 - Ecology **Credits: 3**

- WLE 201 - Ecology Laboratory **Credits: 3**

Second Year - Second Semester

- CHY 121 - General Chemistry I **Credits: 3**
- CHY 123 - General Chemistry Laboratory I **Credits: 1**
Or
- CHY 122 - General Chemistry II **Credits: 3**
- CHY 124 - General Chemistry Laboratory II **Credits: 1**

- EES 140 - Soil Science **Credits: 3**
Or
- ERS 101 - Introduction to Earth Science **Credits: 4**
Or
- ERS 102 - Environmental Geology **Credits: 4**

- 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 461 - Human Dimensions of Fisheries and Wildlife Conservation **Credits: 3**
- Aquatic Ecology Elective Credits: 3

Third Year - Second Semester

- BIO 350 - Concepts and Applications of Genetics **Credits: 3**
Or
- BIO 365 - Fundamentals of 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 - Environmental Economics and Policy **Credits: 3**

Or

- EES 351 - Energy, Wealth, and Power: a Biophysical Systems view of Nature and Society **Credits: 3**
- SFR 349 - Applied Forest Ecology and Silviculture **Credits: 4**

Or

- WLE 423 - Wetland Ecology and Conservation **Credits: 4**
- Elective Credits: 6
- WLE 410 - Wildlife Population Dynamics and Conservation **Credits: 3**
- WLE 411 - Wildlife Population Dynamics Lab **Credits: 1**

Fourth Year - Second Semester

- WLE 450 - Wildlife-Habitat Relationships **Credits: 3**
- WLE 455 - Wildlife-Habitat Evaluation **Credits: 2**
- or
- WLE 457 - Ecology and Management of Game Birds **Credits: 3**
- or
- HON 499 - Honors Thesis/Research II **Credits: 3**
- or
- WLE 490 - Special Problems **Credits: Ar**
- 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).

Concentrations in Wildlife Ecology

Students majoring in Wildlife Ecology are expected to use their electives to develop an area of specialization. Most students meet this expectation by taking one of three Concentrations defined by the department: **Fisheries, Wildlife Science and Management, or Conservation Biology**. Students may complete the Honors Program or pursue a Minor in a related discipline as approved by their advisor and Undergraduate Program Coordinator as an alternative to a Concentration. Students may also design an **Individual Concentration** according to the criteria below.

NOTE: Concentration courses may be used to meet your General Education requirements, however, *courses should be complementary and additive to the core curriculum*, i.e., **core curriculum courses cannot be counted twice**.

Individual Concentrations

Students who wish to develop an individualized Concentration must write a proposal explaining the rationale for their choice, describing how it fits with their interests and career goals, and listing the courses that they wish to take. Please note that an Individual Concentration cannot be listed on your diploma or transcript.

Concentration in Fisheries (13 cr)

The fisheries concentration curriculum enables students to explore the scientific and applied aspects of fisheries ecology and management and gain experience in field, laboratory, and analytical methods. Students enrolled in this concentration often are active in the University's student chapter of the American Fisheries Society, an international organization composed of

professionals and students in the aquatic sciences. **This curriculum allows students to meet the requirements for professional certification by the American Fisheries Society.** In addition to the core curriculum, students must take the following courses:

Required Courses

- WLE 340 - Freshwater Fisheries Ecology and Management **Credits: 3**
- WLE 341 - Freshwater Fisheries Laboratory **Credits: 1**

Fisheries Course

Choose one of the following courses:

- 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 552 - Coupled Natural and Human Systems
SMS 562 - Fisheries Population Dynamics

Aquatic Science Course

Choose two of the following courses:

- BIO 430 - Ecology and Systematics of Aquatic Insects **Credits: 4**
- BIO 463 - River Ecology **Credits: 4**
- BIO 468 - Lake Ecology **Credits: 3**
- SMS 302 - Oceanography **Credits: 3**
- SMS 322 - Biology of Marine Vertebrates **Credits: 3**
- SMS 422 - Biology of Fishes **Credits: 3**
- WLE 423 - Wetland Ecology and Conservation **Credits: 4**

Concentration in Wildlife Science and Management (12-15 cr)

The Wildlife Science and Management concentration is designed to allow students to explore the scientific and applied aspects of wildlife science and management and gain experience in field, laboratory, and analytical methods. Students enrolled in this curriculum are often active in the University of Maine's Student Chapter of The Wildlife Society. **This curriculum allows students to meet the requirements for professional certification by The Wildlife Society.** In addition to the core curriculum, students must take the following courses:

Required Course

Communications Elective Course, 3 Credits
(in addition to ENG 101, CMJ 103, and WLE 461)

Organismal Biology Course

Choose one of the following courses:

- BIO 433 - Mammalogy **Credits: 4**

- BIO 434 - Avian Biology and Ecology **Credits: 3**

Management Course

Choose one of the following courses:

- BIO 327 - Introductory Applied Entomology **Credits: 4**
- BIO 455 - Biological Invasions **Credits: 3**
- ECO 381 - SL: Sustainability Science, Policy, and Action **Credits: 3**
- EES 324 - Environmental Protection Law and Policy **Credits: 3**
- SFR 228 - Forest Recreation Management **Credits: 3**
- SFR 349 - Applied Forest Ecology and Silviculture **Credits: 4**
- SFR 408 - Silviculture **Credits: 3**
- SFR 409 - Forest Ecology and Silviculture Field Laboratory **Credits: 2**
- SFR 457 - Tree Pests and Disease **Credits: 3**
- SFR 480 - Wilderness and Protected Areas Management **Credits: 3**
- SMS 230 - Introduction to Marine Policy and Fisheries Management **Credits: 3**
- SMS 321 - Introduction to Fisheries Science **Credits: 3**
- WLE 340 - Freshwater Fisheries Ecology and Management **Credits: 3**
- WLE 423 - Wetland Ecology and Conservation **Credits: 4**
- WLE 479 - Wildlife Conservation in a Changing World **Credits: 3**

Science Course

Choose one of the following courses:

- AVS 437 - Animal Diseases **Credits: 3**
- BIO 350 - Concepts and Applications of Genetics **Credits: 3**
- BIO 354 - Animal Behavior **Credits: 3**
- BIO 377 - Medical Physiology **Credits: 3**
- BIO 378 - Medical Physiology Laboratory **Credits: 2**
- SMS 425 - Applied Population Genetics **Credits: 3**

Concentration in Conservation Biology (15-17 cr)

The Conservation Biology concentration is designed to allow students to explore conservation as it applies to a diversity of species and ecosystems, as well as the social sciences that are critical to managing biodiversity and other natural resources. In addition to the core curriculum, students must take the following courses:

Required Course

3 Credits

- WLE 323 - Introduction to Conservation Biology **Credits: 3**
or
- WLE 479 - Wildlife Conservation in a Changing World **Credits: 3**

Organismal Biology Course

Choose one of the following courses:

- BIO 310 - Plant Biology **Credits: 4**
- BIO 326 - General Entomology **Credits: 4**
- BIO 327 - Introductory Applied Entomology **Credits: 4**
- BIO 342 - Plants in Our World **Credits: 3**
- BIO 350 - Concepts and Applications of Genetics **Credits: 3**
- BIO 353 - Invertebrate Zoology **Credits: 4**
- BIO 354 - Animal Behavior **Credits: 3**
- BIO 430 - Ecology and Systematics of Aquatic Insects **Credits: 4**
- BIO 432 - Biology of the Fungi **Credits: 4**
- BIO 433 - Mammalogy **Credits: 4**
- BIO 434 - Avian Biology and Ecology **Credits: 3**
- SMS 322 - Biology of Marine Vertebrates **Credits: 3**
- SMS 422 - Biology of Fishes **Credits: 3**
- SMS 425 - Applied Population Genetics **Credits: 3**

Ecology & Management of Ecosystems Course

Choose one of the following courses:

- BIO 463 - River Ecology **Credits: 4**
- BIO 468 - Lake Ecology **Credits: 3**
- SMS 230 - Introduction to Marine Policy and Fisheries Management **Credits: 3** or SMS 531 - Coral Reefs
- WLE 340 - Freshwater Fisheries Ecology and Management **Credits: 3**
- WLE 423 - Wetland Ecology and Conservation **Credits: 4**
- WLE 479 - Wildlife Conservation in a Changing World **Credits: 3**

Social Science Aspects of Conservation

Choose two of the following courses:

- ANT 235 - Cultural Perceptions of Nature **Credits: 3**
- ANT 250 - Conservation Anthropology: The Socio-Cultural Dimension of Environmental Issues **Credits: 3**
- ANT 431 - Folklore, the Environment and Public Policy **Credits: 3**
- ANT 464 - Ecological Anthropology **Credits: 3**
- ECO 381 - SL: Sustainability Science, Policy, and Action **Credits: 3**
- ECO 450 - International Environmental Economics and Policy **Credits: 3**
- ECO 477 - Natural Resource Economics and Policy **Credits: 3**
- EES 324 - Environmental Protection Law and Policy **Credits: 3**
- PHI 232 - Environmental Ethics **Credits: 3**
- PHI 432 - Environmental Justice **Credits: 3**
- SFR 446 - Forest Resources Policy **Credits: 3**
SMS 552 - Coupled Natural & Human Systems
SMS 555 - Resource Management in Cross-Cultural Perspectives
- SFR 444 - Forest Resources Economics **Credits: 3**

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 431 or BIO 438 or BIO 450 or BIO 463 or HON 498 & 499* or BIO 480 and BIO 483. For specific requirements, see the curricula for individual concentrations.

*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, Undergraduate Program Coordinator, 100 Murray Hall, (207)581-2540, annd@maine.edu

The study of zoology increases our knowledge of human and animal biology. 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.

The Zoology major 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, evolution, physiology, anatomy, biodiversity, ecology, and behavior. Students enrolled in the Honors College will find the program complementary to their degree studies. Each student works with an academic advisor 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. Students wishing to spend a semester studying abroad are advised to discuss this option with their advisor early in their program.

The B.S. and B.A. degrees in Zoology are 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, visit <https://sbe.umaine.edu>.

Students choosing Zoology as a second major are not required to complete a Zoology capstone provided the student completes a capstone for their first major. Zoology is not allowable as a second major for students whose first major is Animal & Veterinary Science with Pre-Veterinary concentration because of substantial overlap between requirements.

Students majoring in Zoology are not eligible for a minor in Biology or second major in Biology or Botany because of extensive overlap in the requirements for these degrees.

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, have a cumulative GPA of 2.0 or better, and a grade of C or better in MAT 111 or no grade record in MAT 111 and a score of 30 or higher on the Math Placement Exam.

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, physics, and social sciences required. The B.S. requires more in-depth study of chemistry, math, and physics while the B.A. requires a minor or more in-depth study of social sciences and humanities. The B.S. provides preparation for the health professions, while the B.A. ensures a broad liberal arts education and allows more flexibility for minors and double majors, allowing students to build career-enhancing skills.

Expertise in Zoology is essential to insure that sound science is the foundation for public policy, laws, regulations, business decisions, natural resource management, and communication about scientific ideas and issues. Educators, artists, writers, lawyers, economists, public policy makers and politicians, and business people in green industries, pharmaceuticals, biotechnology, and agribusiness greatly benefit from a strong background in science. Pairing a BA with a second major or minor builds strength for careers in education, communication, policy, law, or business. In addition, the critical thinking, reading, and writing skills gained through humanities and social sciences courses can significantly contribute to a career in science.

BA students are required to declare a minor or 2nd major in an approved subject outside of botany, biology, or zoology, or complete additional General Education requirements as noted below. BA students are encouraged to explore career options through the University of Maine Career Center and with their academic advisor to select a minor or 2nd major that adds breadth to the academic program by developing skills and knowledge outside of the primary major.

Concentrations in the B.S. and B.A. Degrees in Zoology

The Ecology Concentration is open to students in either the B.S. or B.A. degree program. This concentration is intended for students interested in exposure to ecological principles within the context of a rigorous biological sciences curriculum.

The Entomology Concentration is open to students in either the B.S. or the B.A. degree program. The concentration is intended to provide students with a broad understanding of the form and function of insects, their interactions with people and society, the study of insect conservation, and management in natural and human-derived systems.

The Pre-medical Studies Concentration is open to students in the B.S. degree program only, not the B.A. 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.

Biology Club

Students majoring in Biology, Botany, and Zoology 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.

Accelerated and Special Programs

The University of Maine and New England College of Optometry (NECO) 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 Zoology upon the successful completion of the first year curriculum at NECO. Contact the Career Center's Health Professions Career Consultant (207) 581-2587 for complete program details and a curriculum for the first three years.

Tufts University School of Medicine additionally offers a "Maine Track" MD program, in partnership with Maine Medical Center (MMC) in Portland Maine, for applicants who are interested in a unique, innovative curriculum that will offer clinical training experiences in Maine and expose medical students to the unique aspects of rural practice as well as training in a major tertiary medical center. Tufts requires "Maine Track" students to have taken the SAT or ACT prior to entering University of Maine.

Honors College

Students enrolled in the Honors College will find that the program works well with their major, replacing General Education and capstone requirements. Honors students should work with their advisor to adapt the suggested course sequences below to accommodate their Honors courses.

Bachelor of Science Core Requirements

1. **Basic Biology:** BIO 100 and BIO 200 (Minimum grade of C required in each.)
2. **General Chemistry:** CHY 121, CHY 122, CHY 123, and CHY 124
3. **Organic Chemistry I:** CHY 251 and CHY 253; or BMB 221 and BMB 222
4. **Organic Chemistry II or Biochemistry:** CHY 252 and CHY 254; or BMB 322 and BMB 323
5. **Physics I:** PHY 111 or PHY 121
6. **Physics II:** PHY 112 or PHY 122
7. **Calculus:** MAT 116 or MAT 126 or MAT 136
8. **Statistics:** STS 132 or WLE 220 or PSY 241
9. **Biological Sciences Area Credits (see below):** minimum of 27 credits including 3 credits each from areas I, III, IV, and V, and 6 credits from area II. At least four lab courses (L) must be taken among the BIO Area courses, and at least three animal courses (A), and at least 3 credits of capstone (C). A minimum of 12 of these credits must be taken at University of Maine. Students for whom this is a second major are not required to take a BIO capstone and need only take 24 credits within the Biological Sciences Areas.
10. **Required Course:** NFA 117
11. **Minimum average GPA 2.0 is required for all courses listed in items 1-9 above.**

Bachelor of Arts Core Requirements

1. **Basic Biology:** BIO 100 and BIO 200 (Minimum grade of C required in each.)
2. **General Chemistry:** CHY 121 and CHY 123 or BMB 207 and BMB 209
3. **Earth, Chemical, and Physical Systems**

Choose 2 of the following courses, 6-8 cr

- BMB 208 - Elementary Physiological Chemistry and BMB 210 - Elementary Physiological Chemistry Laboratory
- BMB 221 - Organic Chemistry and BMB 222 - Laboratory in Organic Chemistry
- BMB 322 - Biochemistry and BMB 323 - Biochemistry Laboratory
- BMB 402 - Introduction to Bioinformatics

- CHY 122 - General Chemistry II and CHY 124 - General Chemistry Laboratory II
- CHY 251 - Organic Chemistry I and CHY 253 - Organic Chemistry Laboratory I
- Any ERS course
- Any PHY course 105 or higher

4. Mathematics:

- STS 132, or WLE 220 or PSY 241, Statistics, 3 or 4 cr
- One additional quantitative literacy course is necessary to complete Gen Ed requirements, 3 or 4 cr
 - Recommended courses:
- MAT 116 - Introduction to Calculus
- MAT 122 - Pre-Calculus
- MAT 126 - Calculus I
- COS 121 - Coding for Everyone
- PHI 250 - Formal Logic
- Or any other course listed as filling Quant. Lit. Gen Ed

5. Biological Sciences Area Credits (see below): minimum of 27 credits including 3 credits each from areas I, III, IV, and V, and 6 credits from area II. At least four lab courses (L) must be taken among the BIO Area courses, and at least three animal courses (A), and at least 3 credits of capstone (C). A minimum of 12 of these credits must be taken at University of Maine. Students for whom this is a second major are not required to take a BIO capstone and need only take 24 credits within the Biological Sciences Areas.

6. Required Course: NFA 117

7. Minimum average GPA 2.0 is required for all courses listed in items 1-6 above.

8. Satisfy General Education requirements.

9. Complete the College of Natural Sciences, Forestry & Agriculture Graduation Requirements to obtain a Bachelor of Arts Degree which can be found here: [ELHS BA Graduation Requirements](#)

Ecology Concentration Requirements

1. Satisfy the core requirements of either the B.S. or B.A. degree program.
2. **Statistics requirement:** Take the following course to satisfy the requirement: WLE 220 Note for B.A. students, WLE 220 requires either MAT 116, MAT 122, or MAT 126 as a prerequisite.
3. **For BIO Area V:** Take the following courses: BIO 319 or SMS 300 and at least 3 additional credits chosen from BIO 205, BIO 309, BIO 354, BIO 411, BIO 431, BIO 434, BIO 455, BIO 463, BIO 468, BIO 476, EES 475, PSE 457, SFR 457, SMS 308, WLE 200, or WLE 423.
4. **Primary and Secondary Producers:** Choose at least one plant course from this list: BIO 310, BIO 342, BIO 429, BIO 432, BIO 452, BIO 464, PSE 457, SFR 439, SFR 457
5. **Environmental Influences:** At least 3 credits from this list: EES 140, ERS 101, ERS 102, ERS 103, ERS 107, ERS 108, ERS 121, ERS 152, SFR 406. or SMS 108
6. **Field Experience:** At least one of the following courses: BIO 205, BIO 309, BIO 430, BIO 437, BIO 463, EES 475, WLE 201, or WLE 423. This course can also satisfy one of the BIO areas for the basic Zoology major.
7. **General Education requirement:** To fill the general education capstone requirement (3 Biological Sciences credit labeled (C)), students in the Ecology Concentration must take one of the following: BIO 388, BIO 392, BIO 431, BIO 463 or HON 499 (Topic must be in ecology and thesis advisor should be in SBE).

8. **Writing Intensive:** ENG 201, ENG 315 or ENG 317. The requirement is satisfied for students who complete the Honors Civilization Sequence (HON 111, HON 112, HON 211, HON 212)

Entomology Concentration Requirements

1. Satisfy the core requirements of either the B.S. or B.A. degree program.
2. **Biological Science AREAS 1-5:** Students may take any courses they want in any areas in accordance with degree requirements. However, to fill the requirements of the Entomology Concentration, course choices must include the following:
 - **For BIO area 4:** Take BIO 326
 - **For BIO area 5:** Take two of the following courses:
BIO 205, BIO 319, BIO 354, BIO 411, BIO 429, BIO 431, BIO 455, BIO 463, EES 140, PSE 457
 - **Insect specific courses:** Among the Biological Sciences Areas courses, include at least three of the following courses, which can overlap with requirements listed above:
BIO 326, BIO 411, BIO 429, BIO 430
 - **Plant course:** Include at least one plant focused course (labeled "P"), which can overlap with requirements listed above, from this list:
BIO 310, BIO 429, BIO 432, BIO 452, BIO 464, PSE 457, SFR 439
3. **General Education requirement:** Students are strongly encouraged to complete their capstone requirement (3 Biological Sciences credits labeled (C)) through independent research, BIO 388 or HON 499.

Pre-medical Studies Concentration Requirements

1. Satisfy the core requirements for the B.S.
2. Fill the B.S. Organic Chemistry requirements with: CHY 251, CHY 252, CHY 253, and CHY 254
3. At least one of the BIO area I choices must come from this list: BIO 336, BIO 480, or BMB 300
4. At least one of the BIO area III course choices must come from this list: BIO 377 or BMB 440
5. From BIO area IV, students must take either: BIO 329 and BIO 331; or BIO 335
6. To fill the general education capstone requirements (3 Biological Sciences credits labeled (C)), students in the Pre-medical Studies Concentration must take one of the following list:
BIO 388 (highly recommended), BIO 431, BIO 438, BIO 450, HON 499 (topic in Biology with an SBE faculty advisor), or both BIO 480 and BIO 483.
7. **Biochemistry:** BMB 322 and BMB 323

If, and only if, CHY251, CHY 252, CHY 253, and CHY 254 are also taken, BMB 323 may count as one of the four required BIO area labs.
8. **Writing Intensive (take one of the following):** ENG 201, ENG 315, or ENG 317. Optional for students completing the Honors Program.
9. **Other requirements:** PSY 100, SOC 101, BIO 302, and one of PHI 235 (recommended), PHI 100, PHI 230, PHI 231, PHI 233. (BIO 302 is optional for students completing the Honors Program).
10. **Recommended courses:** INT 107 and INT 207 are highly recommended, but not required.

Pre-medical Studies Notes

- a. Inclusion of BIO 480, Cell Biology, is highly recommended.
- b. Physician assistant, pharmacy, optometry, and physical therapy schools require two semesters of anatomy and physiology (8 credits). This requirement can be met by combining BIO 335, Human Anatomy, and BIO 377 & 378 Medical Physiology and lab (recommended); or by combining BIO 208, Anatomy and Physiology, and BIO 377 & 378 Medical Physiology and lab. Note that BIO 208 does not count toward the Biology or Zoology degree requirements. Students should research admission requirements of specific schools and are strongly encouraged to work with the Health Professions Career Counselor in the Career Center.
- c. Students pursuing this concentration may want to consider a minor in Neuroscience, Chemistry, Psychology, or Business.
- d. Pre-medical studies students are strongly encouraged to work with the Career Center's Health Professions Career Counselor throughout their entire undergraduate program.

Bachelor of Science Core Requirements-New England College of Optometry 3+

Students in the UM-NECO 3+ program complete 90 credits at UMaine over three years, moving on to NECO in their fourth year. Upon completion of the first year at NECO, 30 credits are transferred back to UMaine and students are awarded their BS degree.

1. **Basic Biology:**

BIO 100 and BIO 200

(Minimum grade of C required in each)

2. **General Chemistry:**

CHY 121, CHY 122, CHY 123, and CHY 124

3. **Organic Chemistry I:**

CHY 251 and CHY 253

4. **Biochemistry:**

BMB 322 and BMB 323

5. **Physics I:**

PHY 111 or PHY 121

6. **Physics II:**

PHY 112 or PHY 122

7. **Calculus:**

MAT 116 or MAT 126 or MAT 136

8. **Statistics:**

STS 132

9. Biological Sciences Area Credits (see below): minimum of 17 credits including courses from Biological Science Areas as noted for each area. At least three lab courses (L) must be taken among the BIO area courses. A minimum of 12 of these credits must be taken at the University of Maine. For area I, students take BMB 300 to completely fill the area. At least three animal courses (A) from the BIO areas must be taken.

10. Required Course:

NFA 117

11. Satisfy general education requirements. Capstone and Writing Intensive within major are satisfied by the NECO course credits. Students must take PSY 100 (fills Social Contexts) and either ENG 315 or ENG 317 (fills Writing Intensive)

12. Courses recommended but not required: INT 107, INT 207

13. Minimum average GPA: 2.0 is required for all courses listed in items 1-9 above to complete UMaine degree. NECO requires an overall GPA of 3.3 and a within-major GPA of 3.1.

14. Upon completion of the first year at NECO: the student must have NECO send a transcript to UMaine. Successful transfer of 30 credits (minimum grade of C-) from NECO to UMaine is required to complete the UMaine Zoology degree. The degree will be awarded at the end of the semester in which the NECO first year transcript is received by UM Office of Student Records.

Biological Sciences Areas for the B.S. or B.A.

Area I. Cell and Molecular Biology

Students must take BMB 280 or BIO 480 or 6 total credits from the area.

- BIO 336 - Developmental Biology **Credits: 4**
- BIO 438 - Morphogenesis in Development and Disease **Credits: 3**
- BIO 450 - Histology **Credits: 4**
- BIO 474 - Neurobiology **Credits: 3**
- BIO 480 - Cell Biology **Credits: 3**
- BIO 483 - Cell Biology Laboratory **Credits: 2**
- 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
- A - BIO 336, BIO 474
- C - BIO 438, BIO 450, BIO 480 & BIO 483 taken together

Area II. Genetics and Evolution

Both courses are required.

- BIO 350 - Concepts and Applications of Genetics **Credits: 3**
- BIO 365 - Fundamentals of Evolution **Credits: 3**

Area III. Physiology

Students must take 3 credits from the Area.

- BIO 307 - Interdisciplinary Neuroscience **Credits: 3**
- BIO 311 - Animal Ecophysiology **Credits: 3**
- BIO 377 - Medical Physiology **Credits: 3**
- BIO 378 - Medical Physiology Laboratory **Credits: 2**
- BMB 440 - Introductory Immunology **Credits: 3**
- BMB 441 - Introductory Immunology Laboratory **Credits: 1**
- L - BIO 378, BMB 431, BIO 483, BMB 441
- A - BIO 307, BIO 311, BIO 377, BMB 440

Area IV: Biodiversity

Students must take 3 credits from the Area.

- 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 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**
- L - BIO 326, BIO 331, BIO 335, BIO 353, BIO 430, BIO 432, BIO 433, BIO 464
- A - BIO 326, BIO 329, BIO 335, BIO 353, BIO 430, BIO 433

Area V: Ecology and Behavior

Students must take BIO 319 or SMS 300 or 6 total credits from the area.

- AVS 254 - Introduction to Animal Microbiomes **Credits: 3**
- BIO 205 - Field Natural History of Maine **Credits: 4**
- BIO 309 - Sustainability and Conservation Travel Study **Credits: 3**
- BIO 319 - General Ecology **Credits: 3**
- BIO 354 - Animal Behavior **Credits: 3**
- BIO 411 - Insect Ecology **Credits: 3**
- BIO 429 - Plant-Insect Interaction **Credits: 3**
- BIO 431 - Emerging Infectious Diseases **Credits: 4**
- BIO 434 - Avian Biology and Ecology **Credits: 3**
- BIO 437 - Avian Biology and Ecology Laboratory **Credits: 1**
- BIO 455 - Biological Invasions **Credits: 3**
- 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
- PSE 457 - Plant Pathology **Credits:** 4
- SMS 300 - Marine Ecology **Credits:** 3
- SMS 308 - Conservation and Ecology of Marine Mammals **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 309, BIO 431, BIO 437, BIO 463, BIO 476, EES 141, EES 475, PSE 457, WLE 201, WLE 423
- A - AVS 254, BIO 354, BIO 411, BIO 434, SMS 308
- C - BIO 431, BIO 463

Alternate Area

Courses within the Alternate Area can be included in the 27 total area minimum credits, but do not count toward any specific area except by prior arrangement with the program coordinator.

- 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
 - BMB 155 - Genome Discovery II: From DNA to Genes **Credits:** 3
or
 - HON 155 - Genome Discovery II: From DNA to Genes **Credits:** 3
 - BMB 400 - Molecular Genetics **Credits:** 3
 - BMB 402 - Introduction to Bioinformatics **Credits:** 3
 - * HON 498 - Honors Thesis/Research I **Credits:** 3
 - * HON 499 - Honors Thesis/Research II **Credits:** 3
 - L - BMB/HON 155, BMB 490
 - C - BIO 388, BIO 392, BIO 402, HON 499
- *Honors topic must be approved by Program Coordinator or Director.

Required Courses in Suggested Sequence for the B.S. in Zoology

Sequences may vary depending on student interests, transfer or AP credits, and beginning math level. The following is intended as an example of a 4-year sequence for this program and does not replace academic advising. Students and advisors should work together, carefully reviewing curriculum requirements, noting timing of courses and prerequisites, to design a program best suited to the individual student.

Students are encouraged to take 30 credits per academic year (fall, winter, spring, and summer combined) to achieve the 120 credit minimum for graduation.

First Year - First Semester

- BIO 100 - Basic Biology **Credits:** 4
- ENG 101 - College Composition **Credits:** 3

- MAT 111 - Algebra for College Mathematics **Credits: 3**
or
- MAT 116 - Introduction to Calculus **Credits: 3**
- NFA 117 - First-Year Success Seminar **Credits: 1**
- General Education Requirement or Elective **Credits: 3**
- Elective **Credits: 1**

First Year - Second Semester

- BIO 200 - Biology of Organisms **Credits: 4**
- BMB 280 - Introduction to Molecular and Cellular Biology **Credits: 3**
- MAT 116 - Introduction to Calculus **Credits: 3**
or
- General Education Requirement or free electives **Credits: 3**
- General Education Requirement **Credits: 3**
- Elective **Credit: 2**

Second Year - First Semester

- BIO 350 - Concepts and Applications of Genetics **Credits: 3**
- BIO area IV **Credits: 4** Either
BIO 326 - General Entomology **Credits: 4**
or
BIO 329 - Vertebrate Biology **Credits: 3**
with
BIO 331 - Vertebrate Biology Laboratory **Credits: 1**
or
BIO 353 - Invertebrate Zoology **Credits: 4**
- CHY 121 - General Chemistry I **Credits: 3**
with
- CHY 123 - General Chemistry Laboratory I **Credits: 1**
- General Education Requirement **Credits: 3**
- Elective **Credit: 1**

Second Year - Second Semester

- BIO 319 - General Ecology **Credits: 3**
- BIO 365 - Fundamentals of Evolution **Credits: 3**
- CHY 122 - General Chemistry II **Credits: 3**
with
- CHY 124 - General Chemistry Laboratory II **Credits: 1**
- General Education Requirement **Credits: 3**
- Elective **Credits: 2**

Third Year - First Semester

- BMB 221 - Organic Chemistry **Credits: 3**
with

- BMB 222 - Laboratory in Organic Chemistry **Credits: 1**
or
- CHY 252 - Organic Chemistry II **Credits: 3**
with
- CHY 254 - Organic Chemistry Laboratory II **Credits: 2**
- **BIO area III or IV or capstone Either**
 BIO 311 - Animal Ecophysiology **Credits: 3**
 with
 BIO 378 - Medical Physiology Laboratory **Credits: 2**
 or
 BIO 342 - Plants in Our World **Credits: 3**
 or
 BIO 377 - Medical Physiology **Credits: 3**
 with
 BIO 378 - Medical Physiology Laboratory **Credits: 2**
 or
 BIO 430 - Ecology and Systematics of Aquatic Insects **Credits: 4**
 or
 BIO 432 - Biology of the Fungi **Credits: 4**
 or
 BIO 438 - Morphogenesis in Development and Disease **Credits: 3**
 or
 BIO 463 - River Ecology **Credits: 4**
- STS 132 - Principles of Statistical Inference **Credits: 3**
- General Education Requirement-Writing Intensive **Credits: 3**
- Elective **Credits: 1**

Third Year - Second Semester

- **BIO area IV or V or capstone, Either**
 BIO 310 - Plant Biology **Credits: 4**
 or
 BIO 335 - Human Anatomy **Credits: 4**
 or
 BIO 431 - Emerging Infectious Diseases **Credits: 4**
 or
 BIO 433 - Mammalogy **Credits: 4**
 or
 BIO 476 - Paleoecology **Credits: 4**
 or
 BIO 434 - Avian Biology and Ecology **Credits: 3**
 with
 BIO 437 - Avian Biology and Ecology Laboratory **Credits: 1**
- BMB 322 - Biochemistry **Credits: 3**
with
- BMB 323 - Biochemistry Laboratory **Credits: 2**
or
- CHY 252 - Organic Chemistry II **Credits: 3**
and
- CHY 254 - Organic Chemistry Laboratory II **Credits: 2**
- General Education Requirement **Credits: 3**

- Elective **Credits: 3**

Fourth Year - First Semester

- PHY 111 - General Physics I **Credits: 4**
- **Capstone or BIO course with lab or BIO elective Either:**
 BIO 353 - Invertebrate Zoology **Credits: 4**
 or
 BIO 430 - Ecology and Systematics of Aquatic Insects **Credits: 4**
 or
 BIO 438 - Morphogenesis in Development and Disease **Credits: 3**
 or
 BIO 468 - Lake Ecology **Credits: 3**
- General Education Requirements **Credits: 3**
- Electives **Credits: 4**

Fourth Year - Second Semester

- **Capstone or BIO course with lab or BIO elective Either**
 BIO 431 - Emerging Infectious Diseases **Credits: 4**
 or
 BIO 476 - Paleoecology **Credits: 4**
 or
 BIO 434 - Avian Biology and Ecology **Credits: 3**
 with
 BIO 437 - Avian Biology and Ecology Laboratory **Credits: 1**
 or
 BIO 450 - Histology **Credits: 4**
 or
 BIO 480 - Cell Biology **Credits: 3**
 with
 BIO 483 - Cell Biology Laboratory **Credits: 2**
- PHY 112 - General Physics II **Credits: 4**
- General Education Requirements **Credits: 3**
- Electives **Credits: 4**

Required Courses in Suggested Sequence for the B.S. in Zoology With Honors, Chemistry taken in Second Year

Sequences may vary depending on student interests, transfer or AP credits, and beginning math level. The following is intended as an example of a 4-year sequence for this program and does not replace academic advising. Students and advisors should work together, carefully reviewing curriculum requirements, noting timing of courses and prerequisites, to design a program best suited to the individual student.

Students are encouraged to take 30 credits per academic year (fall, winter, spring, and summer combined) to achieve the 120 credit minimum for graduation.

Honors College

Students enrolled in the Honors College will find that the program works well with their major, replacing General Education and capstone requirements. Honors students should work with their advisor to adapt the suggested course sequences below to accommodate their Honors courses.

First Year - First Semester

- BIO 100 - Basic Biology **Credits: 4**
- HON 111 - Civilizations: Past, Present and Future I **Credits: 4**
- MAT 111 - Algebra for College Mathematics **Credits: 3**
or
- MAT 116 - Introduction to Calculus **Credits: 3**
- NFA 117 - First-Year Success Seminar **Credits: 1**
- Elective **Credits: 3**

First Year - Second Semester

- BIO 200 - Biology of Organisms **Credits: 4**
- BMB 280 - Introduction to Molecular and Cellular Biology **Credits: 3**
- MAT 116 - Introduction to Calculus **Credits: 3**
or
- Elective **Credits: 3**
- HON 112 - Civilizations: Past, Present and Future II **Credits: 4**
- HON 170 - Currents and Context **Credits: 1**
or
- HON 180 - A Cultural Odyssey **Credits: 1**

Second Year - First Semester

- BIO 350 - Concepts and Applications of Genetics **Credits: 3**
- **BIO Area IV Either**
BIO 326 - General Entomology **Credits: 4**
or
BIO 329 - Vertebrate Biology **Credits: 3**
with
BIO 331 - Vertebrate Biology Laboratory **Credits: 1**
or
BIO 353 - Invertebrate Zoology **Credits: 4**
- CHY 121 - General Chemistry I **Credits: 3**
with
- CHY 123 - General Chemistry Laboratory I **Credits: 1**
- HON 211 - Civilizations: Past, Present and Future III **Credits: 4**

Second Year - Second Semester

- BIO 319 - General Ecology **Credits: 3**
- BIO 365 - Fundamentals of Evolution **Credits: 3**
- CHY 122 - General Chemistry II **Credits: 3**
and

- CHY 124 - General Chemistry Laboratory II **Credits: 1**
- HON 170 - Currents and Context **Credits: 1**
or
- HON 180 - A Cultural Odyssey **Credits: 1**
- HON 212 - Civilizations: Past, Present and Future IV **Credits: 4**

Third Year - First Semester

- **BIO area III or IV or capstone Either**
BIO 311 - Animal Ecophysiology **Credits: 3**
with
BIO 378 - Medical Physiology Laboratory **Credits: 2**
or
BIO 377 - Medical Physiology **Credits: 3**
with
BIO 378 - Medical Physiology Laboratory **Credits: 2**
or
BIO 430 - Ecology and Systematics of Aquatic Insects **Credits: 4**
or
BIO 438 - Morphogenesis in Development and Disease **Credits: 3**
or
BIO 463 - River Ecology **Credits: 4**
- BMB 221 - Organic Chemistry **Credits: 3**
with
- BMB 222 - Laboratory in Organic Chemistry **Credits: 1**
- HON 3XX - Honors Tutorial **Credits: 3**
- STS 132 - Principles of Statistical Inference **Credits: 3**
- Elective **Credits: 1**

Third Year - Second Semester

- BMB 322 - Biochemistry **Credits: 3**
with
- BMB 323 - Biochemistry Laboratory **Credits: 2**
- **BIO area IV or V or capstone, Either**
BIO 335 - Human Anatomy **Credits: 4**
or
BIO 431 - Emerging Infectious Diseases **Credits: 4**
or
BIO 433 - Mammalogy **Credits: 4**
or
BIO 476 - Paleocology **Credits: 4**
or
BIO 434 - Avian Biology and Ecology **Credits: 3**
with
BIO 437 - Avian Biology and Ecology Laboratory **Credits: 1**
- HON 391 - Introduction to Thesis Research **Credits: 1**
- Elective **Credits: 5**

Fourth Year - First Semester

- HON 498 - Honors Thesis/Research I **Credits: 3**
- PHY 111 - General Physics I **Credits: 4**
- BIO course with lab **Credits: 4**
- Electives **Credits: 4**

Fourth Year- Second Semester

- HON 499 - Honors Thesis/Research II **Credits: 3**
- PHY 112 - General Physics II **Credits: 4**
- Any remaining BIO requirements or electives **Credits: 3**
- General Education requirement **Credits: 3**
- Electives **Credits: 2**

Required Courses in Suggested Sequence for the B.S. in Zoology with Ecology Concentration

Sequences may vary depending on student interests, transfer or AP credits, and beginning math level. The following is intended as an example of a 4-year sequence for this program and does not replace academic advising. Students and advisors should work together, carefully reviewing curriculum requirements, noting timing of courses and prerequisites, to design a program best suited to the individual student.

Students are encouraged to take 30 credits per academic year (fall, winter, spring, and summer combined) to achieve the 120 credit minimum for graduation.

First Year - First Semester

- BIO 100 - Basic Biology **Credits: 4**
- ENG 101 - College Composition **Credits: 3**
- MAT 111 - Algebra for College Mathematics **Credits: 3**
or
- MAT 116 - Introduction to Calculus **Credits: 3**
- NFA 117 - First-Year Success Seminar **Credits: 1**
- General Education requirement or Elective **Credits: 3**
- Elective **Credits: 1**

First Year - Second Semester

- BIO 200 - Biology of Organisms **Credits: 4**
- BMB 280 - Introduction to Molecular and Cellular Biology **Credits: 3**
- MAT 116 - Introduction to Calculus **Credits: 3**
or
- Elective **Credits: 3**
- General Education requirement **Credits: 3**
- Elective **Credits: 2**

Second Year - First Semester

- BIO 205 - Field Natural History of Maine **Credits: 4**
- BIO 350 - Concepts and Applications of Genetics **Credits: 3**
- CHY 121 - General Chemistry I **Credits: 3**
with
- CHY 123 - General Chemistry Laboratory I **Credits: 1**
- BIO 329 - Vertebrate Biology **Credits: 3**
with
- BIO 331 - Vertebrate Biology Laboratory **Credits: 1**
or
- BIO 353 - Invertebrate Zoology **Credits: 4**

Second Year - Second Semester

- BIO 319 - General Ecology **Credits: 3**
- BIO 365 - Fundamentals of Evolution **Credits: 3**
- BIO 310 - Plant Biology **Credits: 4**
or
- BIO 335 - Human Anatomy **Credits: 4**
or
- BIO Elective **Credits: 4**
- CHY 122 - General Chemistry II **Credits: 3**
with
- CHY 124 - General Chemistry Laboratory II **Credits: 1**
- Elective **Credits: 1**

Third Year - First Semester

- BMB 221 - Organic Chemistry **Credits: 3**
with
- BMB 222 - Laboratory in Organic Chemistry **Credits: 1**
- BIO 311 - Animal Ecophysiology **Credits: 3**
or
- BIO 377 - Medical Physiology **Credits: 3**
- BIO 378 - Medical Physiology Laboratory **Credits: 2**
or
- General Education requirement **Credits: 3**
- Environmental Influences course **Credits: 3**
- General Education requirement **Credits: 3**

Third Year - Second Semester

- BIO 354 - Animal Behavior **Credits: 3**
- BMB 322 - Biochemistry **Credits: 3**
with
- BMB 323 - Biochemistry Laboratory **Credits: 2**

- ENG 317 - Business and Technical Writing **Credits: 3**
- WLE 220 - Introduction to Ecological Statistics **Credits: 4**

Fourth Year - First Semester

- BIO 464 - Taxonomy of Vascular Plants **Credits: 4**
- **Capstone or BIO Area Either:**
BIO 463 - River Ecology **Credits: 4**
or
BIO 468 - Lake Ecology **Credits: 3**
- PHY 111 - General Physics I **Credits: 4**
- General Education requirement **Credits: 3**

Fourth Year - Second Semester

- PHY 112 - General Physics II **Credits: 4**
- **Capstone or BIO Area Either:**
BIO 431 - Emerging Infectious Diseases **Credits: 4**
or
BIO 433 - Mammalogy **Credits: 4**
or
BIO 476 - Paleoecology **Credits: 4**
or
BIO 480 - Cell Biology **Credits: 3**
with
BIO 483 - Cell Biology Laboratory **Credits: 2**
- General Education requirement **Credits: 6**
- Elective **Credits: 1**

Required Courses in Suggested Sequence for the B.S. in Zoology with Pre-Medical Studies concentration, Chemistry taken in the First Year

Sequences may vary depending on student interests, transfer or AP credits, and beginning math level. The following is intended as an example of a 4-year sequence for this program and does not replace academic advising. Students and advisors should work together, carefully reviewing curriculum requirements, noting timing of courses and prerequisites, to design a program best suited to the individual student.

Students are encouraged to take 30 credits per academic year (fall, winter, spring, and summer combined) to achieve the 120 credit minimum for graduation.

First Year - First Semester

- BIO 100 - Basic Biology **Credits: 4**
- CHY 121 - General Chemistry I **Credits: 3**
with
- CHY 123 - General Chemistry Laboratory I **Credits: 1**
- MAT 116 - Introduction to Calculus **Credits: 3**
- NFA 117 - First-Year Success Seminar **Credits: 1**

- SOC 101 - Introduction to Sociology **Credits: 3**

First Year - Second Semester

- BIO 200 - Biology of Organisms **Credits: 4**
- CHY 122 - General Chemistry II **Credits: 3**
with
- CHY 124 - General Chemistry Laboratory II **Credits: 1**
- ENG 101 - College Composition **Credits: 3**
- INT 107 - Career Exploration in Health Professions **Credits: 2**
- PSY 100 - General Psychology **Credits: 3**

Second Year - First Semester

- BIO 350 - Concepts and Applications of Genetics **Credits: 3**
- CHY 251 - Organic Chemistry I **Credits: 3**
with
- CHY 253 - Organic Chemistry Laboratory I **Credits: 2**
- INT 207 - Orientation to Health Professions **Credits: 2**
- STS 132 - Principles of Statistical Inference **Credits: 3**
- Elective Credit: 1

Second Year - Second Semester

- BIO 365 - Fundamentals of Evolution **Credits: 3**
- BMB 322 - Biochemistry **Credits: 3**
with
- BMB 323 - Biochemistry Laboratory **Credits: 2**
- CHY 252 - Organic Chemistry II **Credits: 3**
with
- CHY 254 - Organic Chemistry Laboratory II **Credits: 2**
- General Education requirement - Artistic & Creative Expression **Credits: 3**

Third Year - First Semester

- AVS 254 - Introduction to Animal Microbiomes **Credits: 3**
- BIO 302 - Critical Reading and Verbal Reasoning **Credits: 3**
or
- BIO 438 - Morphogenesis in Development and Disease **Credits: 3**
- BIO 377 - Medical Physiology **Credits: 3**
with
- BIO 378 - Medical Physiology Laboratory **Credits: 2**
- PHY 111 - General Physics I **Credits: 4**

Third Year - Second Semester

- BIO 319 - General Ecology **Credits: 3**
- BIO 335 - Human Anatomy **Credits: 4**
or
- BIO 431 - Emerging Infectious Diseases **Credits: 4**
- PHY 112 - General Physics II **Credits: 4**
- General Education requirement - Cultural Diversity & International Perspectives **Credits: 3**
- Elective **Credits: 1**

Fourth Year - First Semester

- BIO 302 - Critical Reading and Verbal Reasoning **Credits: 3**
or
- BIO 438 - Morphogenesis in Development and Disease **Credits: 3**
- BMB 300 - General Microbiology **Credits: 3**
with
- BMB 305 - General Microbiology Laboratory **Credits: 2**
- ENG 317 - Business and Technical Writing **Credits: 3**
- PHI 235 - Biomedical Ethics **Credits: 3**
- Electives **Credits: 2**

Fourth Year - Second Semester

- BIO 335 - Human Anatomy **Credits: 4**
or
Capstone, either:
- BIO 388 - Research Capstone in Biology **Credits: 1-3**
or
- BIO 431 - Emerging Infectious Diseases **Credits: 4**
or
- BIO 450 - Histology **Credits: 4**
or
- BIO 480 - Cell Biology **Credits: 3**
with
- BIO 483 - Cell Biology Laboratory **Credits: 2**
- General Education Requirement or Elective Credit: 3
- Elective Credits: 8

Required Courses in Suggested Sequence for the B.S. in Zoology with Pre-medical Studies Concentration, Chemistry taken in Second Year

Sequences may vary depending on student interests, transfer or AP credits, and beginning math level. The following is intended as an example of a 4-year sequence for this program and does not replace academic advising. Students and advisors should work together, carefully reviewing curriculum requirements, noting timing of courses and prerequisites, to design a program best suited to the individual student.

Students are encouraged to take 30 credits per academic year (fall, winter, spring, and summer combined) to achieve the 120 credit minimum for graduation.

First Year - First Semester

- BIO 100 - Basic Biology **Credits: 4**
- ENG 101 - College Composition **Credits: 3**
- MAT 111 - Algebra for College Mathematics **Credits: 3**
or
- MAT 116 - Introduction to Calculus **Credits: 3**
- NFA 117 - First-Year Success Seminar **Credits: 1**
- SOC 101 - Introduction to Sociology **Credits: 3**
- Elective **Credits: 1**

First Year - Second Semester

- BIO 200 - Biology of Organisms **Credits: 4**
- INT 107 - Career Exploration in Health Professions **Credits: 2**
- MAT 116 - Introduction to Calculus **Credits: 3**
or
- Elective **Credits: 3**
- PSY 100 - General Psychology **Credits: 3**
- General Education requirement - Artistic & Creative Expression **Credits:3**

Second Year - First Semester

- BIO 336 - Developmental Biology **Credits: 4**
- BIO 350 - Concepts and Applications of Genetics **Credits: 3**
- CHY 121 - General Chemistry I **Credits: 3**
with
- CHY 123 - General Chemistry Laboratory I **Credits: 1**
- INT 207 - Orientation to Health Professions **Credits: 2**
- General Education requirement - Cultural Diversity & International Perspectives **Credits: 3**

Second Year - Second Semester

- BIO 319 - General Ecology **Credits: 3**
- BIO 365 - Fundamentals of Evolution **Credits: 3**
- CHY 122 - General Chemistry II **Credits: 3**
with
- CHY 124 - General Chemistry Laboratory II **Credits: 1**
- STS 132 - Principles of Statistical Inference **Credits: 3**
- Elective **Credits: 1**

Third Year - First Semester

- BIO 302 - Critical Reading and Verbal Reasoning **Credits: 3**
or
- BIO 438 - Morphogenesis in Development and Disease **Credits: 3**
- BIO 377 - Medical Physiology **Credits: 3**
with
- BIO 378 - Medical Physiology Laboratory **Credits: 2**
- CHY 251 - Organic Chemistry I **Credits: 3**
with
- CHY 253 - Organic Chemistry Laboratory I **Credits: 2**
- ENG 317 - Business and Technical Writing **Credits: 3**

Third Year - Second Semester

- BIO 335 - Human Anatomy **Credits: 4**
or
- BIO 431 - Emerging Infectious Diseases **Credits: 4** (Capstone)
- BMB 322 - Biochemistry **Credits: 3**
with
- BMB 323 - Biochemistry Laboratory **Credits: 2**
- CHY 252 - Organic Chemistry II **Credits: 3**
with
- CHY 254 - Organic Chemistry Laboratory II **Credits: 2**

Fourth Year - First Semester

- BIO 302 - Critical Reading and Verbal Reasoning **Credits: 3**
or
- BIO 438 - Morphogenesis in Development and Disease **Credits: 3**
- BMB 300 - General Microbiology **Credits: 3**
with
- BMB 305 - General Microbiology Laboratory **Credits: 2**
- PHI 235 - Biomedical Ethics **Credits: 3**
- PHY 111 - General Physics I **Credits: 4**

Fourth Year - Second Semester

- PHY 112 - General Physics II **Credits: 4**
- BIO 335 - Human Anatomy **Credits: 4**
- **or Capstone Either:**
BIO 388 - Research Capstone in Biology **Credits: 1-3**
or
BIO 431 - Emerging Infectious Diseases **Credits: 4**
or
BIO 450 - Histology **Credits: 4**
or
BIO 480 - Cell Biology **Credits: 3**

with

BIO 483 - Cell Biology Laboratory **Credits: 2**

- General Education requirement or Elective **Credits: 3**
- Elective **Credits: 4**

Courses in Suggested Sequence for the B.S. in Zoology, NECO 3+

First Year - First Semester

- BIO 100 - Basic Biology **Credits: 4**
- CHY 121 - General Chemistry I **Credits: 3**
- CHY 123 - General Chemistry Laboratory I **Credits: 1**
- ENG 101 - College Composition **Credits: 3**
- MAT 116 - Introduction to Calculus **Credits: 3**
- NFA 117 - First-Year Success Seminar **Credits: 1**

First Year - Second Semester

- BIO 200 - Biology of Organisms **Credits: 4**
- CHY 122 - General Chemistry II **Credits: 3**
- CHY 124 - General Chemistry Laboratory II **Credits: 1**
- INT 107 - Career Exploration in Health Professions **Credits: 2**
- PSY 100 - General Psychology **Credits: 3**
- STS 132 - Principles of Statistical Inference **Credits: 3**

Second Year - First Semester

- BIO 350 - Concepts and Applications of Genetics **Credits: 3**
- BIO 377 - Medical Physiology **Credits: 3**
- BIO 378 - Medical Physiology Laboratory **Credits: 2**
- CHY 251 - Organic Chemistry I **Credits: 3**
- CHY 253 - Organic Chemistry Laboratory I **Credits: 2**
- INT 207 - Orientation to Health Professions **Credits: 2**

Second Year -Second Semester

- BIO 335 - Human Anatomy **Credits: 4**
- BIO 365 - Fundamentals of Evolution **Credits: 3**
- BMB 322 - Biochemistry **Credits: 3**
- BMB 323 - Biochemistry Laboratory **Credits: 2**
- PHI 235 - Biomedical Ethics **Credits: 3**

Third Year - First Semester

- AVS 254 - Introduction to Animal Microbiomes **Credits: 3**
- BMB 300 - General Microbiology **Credits: 3**

- BMB 305 - General Microbiology Laboratory **Credits: 2**
- ENG 317 - Business and Technical Writing **Credits: 3**
- PHY 111 - General Physics I **Credits: 4**

Third Year - Second Semester

- BIO 319 - General Ecology **Credits: 3**
- PHY 112 - General Physics II **Credits: 4**
- SOC 101 - Introduction to Sociology **Credits: 3**
 - General Education Requirement (Artistic and Creative Expression) **Credits: 3**
- General Education Requirement (Cultural Diversity and International Perspectives) **Credits: 3**

Fourth Year

Student attends NECO and transfers courses back to UMaine at the end of the academic year. Capstone and writing-intensive-within-major are waived.

Required Courses in Suggested Sequence for the B.A. in Zoology

Sequences may vary depending on student interests, transfer or AP credits, and beginning math level. The following is intended as an example of a 4-year sequence for this program and does not replace academic advising. Students and advisors should work together, carefully reviewing curriculum requirements, noting timing of courses and prerequisites, to design a program best suited to the individual student.

Students are encouraged to take 30 credits per academic year (fall, winter, spring, and summer combined) to achieve the 120 credit minimum for graduation.

The BA sequence is intentionally flexible to allow students to pursue a minor or second major. The sequence here outlined is only one of many possibilities. Students are encouraged to work with their academic advisor to develop a customized sequence to meet their academic goals.

First Year - First Semester

- BIO 100 - Basic Biology **Credits: 4**
- ENG 101 - College Composition **Credits: 3**
- MAT 111 - Algebra for College Mathematics **Credits: 3**
- NFA 117 - First-Year Success Seminar **Credits: 1**
- General Education Requirement **Credit: 3**

First Year - Second Semester

- BIO 200 - Biology of Organisms **Credits: 4**
- BMB 280 - Introduction to Molecular and Cellular Biology **Credits: 3**
- STS 132 - Principles of Statistical Inference **Credits: 3**
- General Education Requirement **Credits: 6**

Second Year - First Semester

- AVS 254 - Introduction to Animal Microbiomes **Credits: 3**
- BIO 329 - Vertebrate Biology **Credits: 3**
with
- BIO 331 - Vertebrate Biology Laboratory **Credits: 1**
- BIO 350 - Concepts and Applications of Genetics **Credits: 3**
- BMB 207 - Fundamentals of Chemistry **Credits: 3**
with
- BMB 209 - Fundamentals of Chemistry Laboratory **Credits: 1**
- Elective **Credit: 1**

Second Year - Second Semester

- BIO 319 - General Ecology **Credits: 3**
- BIO 365 - Fundamentals of Evolution **Credits: 3**
- CHY or ERS or PHY course **Credits: 3**
- General Education Requirement **Credits: 3**
- Course for minor **Credits: 3**

Third Year - First Semester

- BIO 311 - Animal Ecophysiology **Credits: 3**
with
- BIO 378 - Medical Physiology Laboratory **Credits: 2**
or
- BIO 463 - River Ecology **Credits: 4**
- BIO 353 - Invertebrate Zoology **Credits: 4**
- CHY or ERS or PHY course **Credits: 3**
- Course for minor **Credits: 3**

Third Year - Second Semester

- BIO 354 - Animal Behavior **Credits: 3**
- BIO 433 - Mammalogy **Credits: 4**
- BIO 434 - Avian Biology and Ecology **Credits: 3**
with
- BIO 437 - Avian Biology and Ecology Laboratory **Credits: 1**
or
- BIO 431 - Emerging Infectious Diseases **Credits: 4**
or
- General Education Requirement **Credits: 4**
- Elective **Credit: 1**
- Course for minor **Credits: 3**

Fourth Year - First Semester

- BIO 311 - Animal Ecophysiology **Credits:** 3
with
- BIO 378 - Medical Physiology Laboratory **Credits:** 2
or
- BIO 463 - River Ecology **Credits:** 4
- Course for minor **Credits:** 6
- General Education Requirement **Credits:** 6

Fourth Year - Second Semester

- BIO 434 - Avian Biology and Ecology **Credits:** 3
with
- BIO 437 - Avian Biology and Ecology Laboratory **Credits:** 1
or
- BIO 431 - Emerging Infectious Diseases **Credits:** 4
or
- General Education Requirement **Credits:** 4
- BIO 480 - Cell Biology **Credits:** 3
with
- BIO 483 - Cell Biology Laboratory **Credits:** 2
or
- BIO 450 - Histology **Credits:** 4
- Course for minor **Credits:** 3
- General Education Requirement **Credits:** 3

Required Courses in Suggested Sequence for the B.A. in Zoology with Ecology Concentration

Sequences may vary depending on student interests, transfer or AP credits, and beginning math level. The following is intended as an example of a 4-year sequence for this program and does not replace academic advising. Students and advisors should work together, carefully reviewing curriculum requirements, noting timing of courses and prerequisites, to design a program best suited to the individual student.

Students are encouraged to take 30 credits per academic year (fall, winter, spring, and summer combined) to achieve the 120 credit minimum for graduation.

First Year - First Semester

- BIO 100 - Basic Biology **Credits:** 4
- ENG 101 - College Composition **Credits:** 3
- MAT 111 - Algebra for College Mathematics **Credits:** 3
- NFA 117 - First-Year Success Seminar **Credits:** 1
- General Education Requirement **Credits:** 3

First Year - Second Semester

- BIO 200 - Biology of Organisms **Credits:** 4

- BMB 280 - Introduction to Molecular and Cellular Biology **Credits: 3**
- CHY or ERS or PHY course **Credits: 3**
- General Education Requirement **Credits: 6**

Second Year - First Semester

- BIO 329 - Vertebrate Biology **Credits: 3**
with
- BIO 331 - Vertebrate Biology Laboratory **Credits: 1**
- BIO 350 - Concepts and Applications of Genetics **Credits: 3**
- BMB 207 - Fundamentals of Chemistry **Credits: 3**
with
- BMB 209 - Fundamentals of Chemistry Laboratory **Credits: 1**
- Course for minor **Credits: 3**

Second Year - Second Semester

- BIO 319 - General Ecology **Credits: 3**
- BIO 365 - Fundamentals of Evolution **Credits: 3**
- BIO 354 - Animal Behavior **Credits: 3**
- Course for minor **Credits: 3**
- General Education Requirement **Credits: 3**

Third Year - First Semester

- BIO 205 - Field Natural History of Maine **Credits: 4**
or
- BIO 353 - Invertebrate Zoology **Credits: 4**
or
- BIO 464 - Taxonomy of Vascular Plants **Credits: 4**
- BIO 311 - Animal Ecophysiology **Credits: 3**
with
- BIO 378 - Medical Physiology Laboratory **Credits: 2**
or
- BIO 463 - River Ecology **Credits: 4**
- ENG 317 - Business and Technical Writing **Credits: 3**
- Course for minor **Credits: 3**

Third Year - Second Semester

- BIO 434 - Avian Biology and Ecology **Credits: 3**
with
- BIO 437 - Avian Biology and Ecology Laboratory **Credits: 1**
or
- BIO 431 - Emerging Infectious Diseases **Credits: 4**
or
- BIO 455 - Biological Invasions **Credits: 3**

- WLE 220 - Introduction to Ecological Statistics **Credits: 4**
- Course for minor **Credits: 3**
- General Education Requirement **Credits: 3**
- Elective **Credits: 1**

Fourth Year - First Semester

- BIO 205 - Field Natural History of Maine **Credits: 4**
or
- BIO 353 - Invertebrate Zoology **Credits: 4**
or
- BIO 464 - Taxonomy of Vascular Plants **Credits: 4**
- BIO 311 - Animal Ecophysiology **Credits: 3**
with
- BIO 378 - Medical Physiology Laboratory **Credits: 2**
or
- BIO 463 - River Ecology **Credits: 4**
- CHY or ERS or PHY course **Credits: 3**
- Course for minor **Credits: 3**

Fourth Year - Second Semester

- BIO 433 - Mammalogy **Credits: 4**
- BIO 434 - Avian Biology and Ecology **Credits: 3**
with
- BIO 437 - Avian Biology and Ecology Laboratory **Credits: 1**
or
- BIO 431 - Emerging Infectious Diseases **Credits: 4**
or
- BIO 455 - Biological Invasions **Credits: 3**
- Course for minor **Credits: 3**
- General Education Requirement **Credits: 3**

Minor

Minor: Animal and Veterinary 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- or higher is required for all AVS courses

Contact Information: Julie Milan, Director of Academic Services, 120 Hitchner Hall, 581-3315, julie.milan@maine.edu

Residency requirement: The 11 credits of required courses and 3 of the elective credits must be taken at the University of Maine

This minor is intended for students from various backgrounds who wish to supplement their education with 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.

Please note:

- Be sure to consider the prerequisites for the courses below when planning for this minor.
- Some of the courses below may be offered in alternate years. Be sure to check the course descriptions in the online Undergraduate Catalog.

Required Courses:

- AVS 145 - Introduction to Animal Science **Credits:** 3
- AVS 346 - Dairy Cattle Technology **Credits:** 3
- AVS 455 - Animal Nutrition **Credits:** 3
- AVS 466 - Livestock Feeds and Feeding **Credits:** 2

Plus at least 7 credits from the following list:

- AVS 146 - Introduction to Animal Science Laboratory **Credits:** 1
- AVS 203 - Equine Management **Credits:** 3
- AVS 211 - Introduction to Aquaculture **Credits:** 3
- AVS 249 - Laboratory and Companion Animal Science **Credits:** 3
- AVS 254 - Introduction to Animal Microbiomes **Credits:** 3
- AVS 267 - Swine Production **Credits:** 1
- AVS 268 - Pasture Poultry Production **Credits:** 1
- AVS 303 - Equine Management Cooperative **Credits:** 2
- AVS 347 - Dairy Cattle Technology Laboratory **Credits:** 2
- AVS 405 - Livestock and Companion Animal Behavior **Credits:** 3
- AVS 437 - Animal Diseases **Credits:** 3

- AVS 446 - Forage Science and Range Management **Credits: 3**
- AVS 454 - DNA Sequencing Analysis Lab **Credits: 2**
- AVS 477 - Zoonoses and Animal Health **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: A C- or higher is required in any course that counts for the minor.

Contact Information: William Ellis, Associate Professor of Oceanography and Associate Director, 360 Aubert Hall, (207) 581-4360, william.ellis@maine.edu

The minor in aquaculture is designed for students in the College of Earth, Life and Health Sciences 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:

- AVS 411 - Advanced Aquaculture **Credits: 3**
- SMS 211 - Introduction to Aquaculture **Credits: 3**
- SMS 401 - Critical Issues in Aquaculture **Credits: 1**

Plus at least 11 credits from the following:

- FSN 440 - Utilization of Aquatic Food Resources **Credits: 3**
- SMS 309 - Techniques in Shellfish Aquaculture **Credits: 2**
- SMS 422 - Biology of Fishes **Credits: 3**
- SMS 425 - Applied Population Genetics **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 Ed Bernard, Undergraduate Coordinator, Hitchner Hall, Room 284, (207) 581-2804, edward.bernard@maine.edu

Courses:

- BMB 323 - Biochemistry Laboratory **Credits:** 2
- BMB 360 - Biochemistry for Molecular and Biomedical Sciences **Credits:** 3
or
- BMB 322 - Biochemistry **Credits:** 3
- 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: Biology minors require a cumulative 2.0 GPA in all courses taken in the minor.

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, Undergraduate Program Coordinator, School of Biology and Ecology, 100 Murray Hall, (207)581-2540, 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 requirements for the minor in Biology include the courses listed below. Students must complete a minimum of 12 credits for this minor with courses that are not otherwise used to fulfill a requirement for their major, another minor, or a concentration. 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

Any courses from this list Credits: 8

- AVS 254 - Introduction to Animal Microbiomes **Credits:** 3
- BIO 205 - Field Natural History of Maine **Credits:** 4
- BIO 307 - Interdisciplinary Neuroscience **Credits:** 3
- BIO 309 - Sustainability and Conservation Travel Study **Credits:** 3
- BIO 310 - Plant Biology **Credits:** 4
- BIO 311 - Animal Ecophysiology **Credits:** 3
- BIO 319 - General Ecology **Credits:** 3
- 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 336 - Developmental Biology **Credits:** 4
- BIO 342 - Plants in Our World **Credits:** 3
- BIO 350 - Concepts and Applications of Genetics **Credits:** 3
- BIO 353 - Invertebrate Zoology **Credits:** 4
- BIO 354 - Animal Behavior **Credits:** 3
- BIO 365 - Fundamentals of Evolution **Credits:** 3
- BIO 377 - Medical Physiology **Credits:** 3

- BIO 378 - Medical Physiology Laboratory **Credits: 2**
- BIO 387 - Undergraduate Research in Biology **Credits: 1-6**
- 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 411 - Insect Ecology **Credits: 3**
- BIO 429 - Plant-Insect Interaction **Credits: 3**
- BIO 430 - Ecology and Systematics of Aquatic Insects **Credits: 4**
- BIO 431 - Emerging Infectious Diseases **Credits: 4**
- BIO 432 - Biology of the Fungi **Credits: 4**
- BIO 433 - Mammalogy **Credits: 4**
- BIO 434 - Avian Biology and Ecology **Credits: 3**
- BIO 437 - Avian Biology and Ecology Laboratory **Credits: 1**
- BIO 438 - Morphogenesis in Development and Disease **Credits: 3**
- BIO 450 - Histology **Credits: 4**
- BIO 452 - Plant Physiology **Credits: 3**
- BIO 453 - Plant Physiology Laboratory **Credits: 1**
- BIO 455 - Biological Invasions **Credits: 3**
- BIO 463 - River Ecology **Credits: 4**
- BIO 464 - Taxonomy of Vascular Plants **Credits: 4**
- BIO 468 - Lake Ecology **Credits: 3**
- BIO 474 - Neurobiology **Credits: 3**
- BIO 476 - Paleoecology **Credits: 4**
- BIO 480 - Cell Biology **Credits: 3**
- BIO 483 - Cell Biology Laboratory **Credits: 2**
- BMB 155 - Genome Discovery II: From DNA to Genes **Credits: 3**
or
- HON 155 - Genome Discovery II: From DNA to Genes **Credits: 3**
- BMB 280 - Introduction to Molecular and Cellular Biology **Credits: 3**
- BMB 300 - General Microbiology **Credits: 3**
- BMB 305 - General Microbiology Laboratory **Credits: 2**
- BMB 400 - Molecular Genetics **Credits: 3**
- BMB 402 - Introduction to Bioinformatics **Credits: 3**
- BMB 420 - Infectious Disease **Credits: 3**
- BMB 421 - Infectious Disease Laboratory **Credits: 2**
- BMB 440 - Introductory Immunology **Credits: 3**
- BMB 441 - Introductory Immunology Laboratory **Credits: 1**
- EES 140 - Soil Science **Credits: 3**
- EES 141 - Soil Science Laboratory **Credits: 1**
- EES 475 - Field Studies in Ecology **Credits: 1-3**
- PSE 457 - Plant Pathology **Credits: 4**
- SFR 439 - Biology of Woody Plants **Credits: 3**
- SMS 300 - Marine Ecology **Credits: 3**
- WLE 200 - Ecology **Credits: 3**
- WLE 201 - Ecology Laboratory **Credits: 3**

Minor: Botany

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to earn minor: 22

GPA requirements to earn minor: Botany minors require a cumulative 2.0 GPA in all courses taken in the minor.

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, Undergraduate Program Coordinator, School of Biology and Ecology, 100 Murray Hall, (207)581-2540, 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. Students must complete a minimum of 12 credits for this minor with courses that are not otherwise used to fulfill a requirement for their major, another minor, or a concentration. The requirements for the minor in Botany include the courses listed below.

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 this list Credits: 14

- BIO 205 - Field Natural History of Maine **Credits:** 4
- BIO 309 - Sustainability and Conservation Travel Study **Credits:** 3
- BIO 310 - Plant Biology **Credits:** 4
- BIO 319 - General Ecology **Credits:** 3
- BIO 326 - General Entomology **Credits:** 4
- BIO 329 - Vertebrate Biology **Credits:** 3
- BIO 331 - Vertebrate Biology Laboratory **Credits:** 1
- BIO 342 - Plants in Our World **Credits:** 3
- BIO 350 - Concepts and Applications of Genetics **Credits:** 3
- BIO 353 - Invertebrate Zoology **Credits:** 4
- BIO 365 - Fundamentals of Evolution **Credits:** 3
- BIO 387 - Undergraduate Research in Biology **Credits:** 1-6
- 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 411 - Insect Ecology **Credits:** 3
- BIO 429 - Plant-Insect Interaction **Credits:** 3
- BIO 430 - Ecology and Systematics of Aquatic Insects **Credits:** 4
- BIO 431 - Emerging Infectious Diseases **Credits:** 4
- BIO 432 - Biology of the Fungi **Credits:** 4
- BIO 452 - Plant Physiology **Credits:** 3
- BIO 453 - Plant Physiology Laboratory **Credits:** 1
- BIO 455 - Biological Invasions **Credits:** 3

- BIO 463 - River Ecology **Credits:** 4
- BIO 464 - Taxonomy of Vascular Plants **Credits:** 4
- BIO 468 - Lake Ecology **Credits:** 3
- BIO 476 - Paleoecology **Credits:** 4
- BIO 480 - Cell Biology **Credits:** 3
- BIO 483 - Cell Biology Laboratory **Credits:** 2
- BMB 155 - Genome Discovery II: From DNA to Genes **Credits:** 3
or
- HON 155 - Genome Discovery II: From DNA to Genes **Credits:** 3
- BMB 280 - Introduction to Molecular and Cellular Biology **Credits:** 3
- BMB 300 - General Microbiology **Credits:** 3
- BMB 305 - General Microbiology Laboratory **Credits:** 2
- BMB 400 - Molecular Genetics **Credits:** 3
- BMB 402 - Introduction to Bioinformatics **Credits:** 3
- EES 140 - Soil Science **Credits:** 3
- EES 141 - Soil Science Laboratory **Credits:** 1
- EES 475 - Field Studies in Ecology **Credits:** 1-3
- PSE 457 - Plant Pathology **Credits:** 4
- SFR 439 - Biology of Woody Plants **Credits:** 3
P - BIO310, BIO342, BIO429, BIO432, BIO452, BIO464, PSE457, SFR439

Minor: Climate Sciences

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to earn minor: 18 (at least 9 credits must be earned at the University of Maine)

GPA requirements to earn the minor: None

Minimum Grade requirements for courses to count toward minor: C-

Contact Information: Alice Doughty, Undergraduate Coordinator, 217 Bryand Global Science Center, 207-581-2159, alice,doughty@maine.edu

A minor in Climate Sciences consists of a minimum of 18 credits of courses in the School of Earth and Climate Sciences, with no more than two courses at the 100 level. No grade below a C- will be accepted toward these requirements. At least 9 credits must be earned at the University of Maine.

18 Credits from the courses listed below, with only two courses at the 100 level:

- EES 398 - Special Seminar In Ecology and Environmental Science **Credits:** 1-3
- EES 598 - Special Seminar in Ecology and Environmental Sciences **Credits:** 1-3
- ERS 101 - Introduction to Earth Science **Credits:** 4
- ERS 102 - Environmental Geology **Credits:** 4
- ERS 103 - Dynamic Earth **Credits:** 3
- ERS 107 - Energy, Environment, & Climate **Credits:** 3
- ERS 108 - Beaches and Coasts **Credits:** 3
- ERS 121 - Humans and Global Change **Credits:** 3

- ERS 152 - Earth's Changing Climate **Credits:** 3
- ERS 200 - Earth Systems **Credits:** 4
- ERS 201 - Global Environmental Change **Credits:** 4
- ERS 240 - The Atmosphere **Credits:** 4
- ERS 301 - Earth and Climate Science Geomatics **Credits:** 4
- ERS 312 - Geochemistry **Credits:** 4
- ERS 315 - Principles of Sedimentology and Stratigraphy **Credits:** 4
- ERS 323 - Extreme Weather **Credits:** 3
- ERS 330 - Earth Materials **Credits:** 4
- ERS 340 - Economic Geology **Credits:** 3
- ERS 350 - Fresh-Water Flow **Credits:** 3
- ERS 361 - The Principles of Geomorphology **Credits:** 3
- ERS 401 - Paleooceanography **Credits:** 3
- ERS 410 - Sea-to-Sky Experience **Credits:** 3
- ERS 420 - Computer Scripting for Data Analysis **Credits:** 3
- ERS 425 - How to Build a Habitable Planet **Credits:** 3
- ERS 441 - Glaciers and Our Landscape **Credits:** 3
- ERS 444 - Introduction to Glaciology **Credits:** 4
- ERS 460 - Marine Geology **Credits:** 3.0
- ERS 480 - Introduction to Hydrogeology **Credits:** 3

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 (At least 9 credits must be earned at the University of Maine)

GPA requirements to earn minor: None.

Minimum Grade requirements for courses to count toward minor: C-

Contact Information: Alice Doughty, Undergraduate Coordinator, 217 Bryand Global Science Center, 207-581-2159, alice.doughty@maine.edu

A minor in Earth Sciences consists of a minimum of 18 credits of courses in the School of Earth and Climate Sciences, no more than two courses at the 1xx level. No grade below a C- will be accepted toward these requirements. At least 9 credits must be earned at the University of Maine.

Courses:

- ERS 101 - Introduction to Earth Science **Credits:** 4
- ERS 102 - Environmental Geology **Credits:** 4
- ERS 103 - Dynamic Earth **Credits:** 3
- ERS 107 - Energy, Environment, & Climate **Credits:** 3
- ERS 108 - Beaches and Coasts **Credits:** 3
- ERS 121 - Humans and Global Change **Credits:** 3
- ERS 152 - Earth's Changing Climate **Credits:** 3
- ERS 200 - Earth Systems **Credits:** 4
- ERS 201 - Global Environmental Change **Credits:** 4
- ERS 240 - The Atmosphere **Credits:** 4
- ERS 301 - Earth and Climate Science Geomatics **Credits:** 4
- ERS 312 - Geochemistry **Credits:** 4
- ERS 315 - Principles of Sedimentology and Stratigraphy **Credits:** 4
- ERS 316 - Structural Geology **Credits:** 4
- ERS 317 - Introduction to Geophysics **Credits:** 4
- ERS 319 - Geohazards and Humans **Credits:** 3
- ERS 323 - Extreme Weather **Credits:** 3
- ERS 330 - Earth Materials **Credits:** 4
- ERS 340 - Economic Geology **Credits:** 3
- ERS 350 - Fresh-Water Flow **Credits:** 3
- ERS 361 - The Principles of Geomorphology **Credits:** 3
- ERS 401 - Paleoceanography **Credits:** 3
- ERS 410 - Sea-to-Sky Experience **Credits:** 3
- ERS 420 - Computer Scripting for Data Analysis **Credits:** 3
- ERS 425 - How to Build a Habitable Planet **Credits:** 3
- ERS 433 - Igneous and Metamorphic Petrology **Credits:** 4
- ERS 441 - Glaciers and Our Landscape **Credits:** 3
- ERS 444 - Introduction to Glaciology **Credits:** 4

- ERS 460 - Marine Geology **Credits:** 3.0
- ERS 480 - Introduction to Hydrogeology **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: Dr. Kate Ruskin, Program Coordinator, 101 Nutting Hall, (207) 581-3177, katharine.ruskin@maine.edu

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 **Credits:** 4
or
- A 300-400 level concentration elective from any EES concentration. For the Environmental Earth and Climate Sciences Concentration, select courses from under "sample tracks within this concentration" header. Credits : 3-4

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 Earth Science **Credits:** 4
or
- ERS 102 - Environmental Geology **Credits:** 4
or
- ERS 108 - Beaches and Coasts **Credits:** 3
or
- SMS 108 - Beaches and Coasts **Credits:** 3

Ecology

- WLE 200 - Ecology **Credits:** 3
or
- BIO 319 - General Ecology **Credits:** 3
or
- SMS 300 - Marine Ecology **Credits:** 3

Field Ecology

- BIO 205 - Field Natural History of Maine **Credits: 4**
- ### **Policy**
- ECO 377 - Environmental Economics and Policy **Credits: 3**
or
 - EES 324 - Environmental Protection Law and Policy **Credits: 3**
or
 - ECO 381 - SL: Sustainability Science, Policy, and Action **Credits: 3**
or
 - SFR 446 - Forest Resources Policy **Credits: 3**
or
 - SMS 230 - Introduction to Marine Policy and Fisheries Management **Credits: 3**
or
 - WLE 323 - Introduction to Conservation Biology **Credits: 3**
- Total Credit Hours: 19 or 21

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: School of Economics, 206 Winslow Hall, (207) 581-3150.

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.

Core Courses:

- ECO 120 - Principles of Microeconomics **Credits: 3**
 - ECO 121 - Principles of Macroeconomics **Credits: 3**
- And one of the following:**
- ECO 221 - Intermediate Macroeconomics **Credits: 3**
 - ECO 220 - Intermediate Microeconomic Theory **Credits: 3**

Economics Elective Courses

Economic courses of the student's choosing, totaling nine (9) credits, with six (6) credits at the 300 level or higher.

Minor: Entomology

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to earn minor: 18

GPA requirements to earn minor: Entomology minors require a cumulative 2.0 GPA in all courses taken in the minor

Contact Information: Ann Dieffenbacher-Krall, Undergraduate Program Coordinator, School of Biology and Ecology, 100 Murray Hall, (207)581-2540, annd@maine.edu

The minor in Entomology is designed for students who would like to develop a basic understanding of entomology and is particularly useful for students of agriculture, horticulture, forestry, forensics, anthropology, wildlife ecology, or premedical studies.

Students must complete a minimum of 12 credits for this minor with courses that are not otherwise used to fulfill a requirement for their major, another minor, or a concentration.

Students will need to take either BIO 100 or PSE 100 or SFR 101 as a prerequisite for the entomology minor.

The minor is not open to students majoring in Biology, Zoology, or Botany. These students can elect the entomology concentration within their major.

Courses:

Required course (4 credits):

- BIO 326 - General Entomology Credits: 4

Choose at least 2 courses from this list (6-7 credits):

- BIO 411 - Insect Ecology Credits: 3
- BIO 429 - Plant-Insect Interaction Credits: 3
- BIO 430 - Ecology and Systematics of Aquatic Insects Credits: 4

Additional courses:

Additional courses to complete 18 credits may be selected from the list above or from the following courses:

- BIO 310 - Plant Biology **Credits: 4**
- BIO 311 - Animal Ecophysiology **Credits: 3**

- BIO 319 - General Ecology **Credits: 3**
or
- SFR 407 - Forest Ecology **Credits: 3**
or
- WLE 200 - Ecology **Credits: 3**

- BIO 350 - Concepts and Applications of Genetics **Credits: 3**
- BIO 353 - Invertebrate Zoology **Credits: 4**
- BIO 365 - Fundamentals of Evolution **Credits: 3**

- BIO 431 - Emerging Infectious Diseases **Credits: 4**
- BIO 432 - Biology of the Fungi **Credits: 4**
- BIO 455 - Biological Invasions **Credits: 3**
- BIO 480 - Cell 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**
- PSE 260 - Pesticide Applicator Certification **Credits: 1**
- PSE 457 - Plant Pathology **Credits: 4**
- SFR 457 - Tree Pests and Disease **Credits: 3**
- SFR 458 - Tree Pests and Disease Lab **Credits: 1**
- WLE 323 - Introduction to Conservation Biology **Credits: 3**

Minor: Environmental Horticulture

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to earn minor: 21

GPA requirements to earn minor: None

Minimum Grade requirements for courses to count toward minor: C- or higher is required for EES 140/141 and all PSE courses.

Contact Information: Julie Milan Director of Academic Services, 120 Hitchner Hall, 581-3315, julie.milan@maine.edu

Residency Requirement: The 15 credits of required courses must be taken at the University of Maine

This minor provides students with foundational skills in horticulture through introductory coursework in plant and soil science and plant identification. Elective courses build on this foundation by offering advanced training in topics related to plant production or landscape horticulture. Courses provide hands-on experience in horticultural facilities, including the Roger Clapp Greenhouses, the Lyle E. Littlefield Garden, and the Landscape Design Studio.

Please note:

- Be sure to consider the prerequisites for the course below when planning for this minor.
- The following courses are not acceptable course choices toward the minor for Sustainable Agriculture majors: BIO 327, PSE 320, PSE 403, PSE 410, PSE 415, PSE 440, and PSE 457.
- Some of the courses below may be offered in alternate years. Be sure to check the course descriptions in the online Undergraduate Catalog.

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 at least 6 credits from the following list:

- PSE 203 - Weed Biology and Identification **Credits: 1**
- PSE 224 - Site Analysis, Grading and Drainage **Credits: 3**
- PSE 227 - Landscape Design I **Credits: 4**
- PSE 260 - Pesticide Applicator Certification **Credits: 1**
- PSE 261 - Nutrient Management **Credits: 1**
- PSE 262 - Introduction to Cannabis Cultivation and Science **Credits: 1**
- PSE 263 - Plant Health Diagnostics **Credits: 1**
- PSE 264 - Introduction to Composting **Credits: 1**
- PSE 325 - Turf and Grounds Management **Credits: 3**
- PSE 403 - Weed Ecology and Management **Credits: 3**
- PSE 410 - Plant Propagation **Credits: 4**
- PSE 415 - Greenhouse Management **Credits: 4**
- PSE 424 - Nursery Management **Credits: 3**
- PSE 440 - Environmental Soil Chemistry and Plant Nutrition **Credits: 3**
- PSE 457 - Plant Pathology **Credits: 4**

Minor: Equine 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- or higher is required for all AVS courses.

Contact Information: Julie Milan, Director of Academic Services, 120 Hitchner Hall, 581-3315, julie.milan@maine.edu

Residency Requirement: The 8 credits of required courses and 6 of the elective credits must be taken at the University of Maine.

This minor is intended for students from various backgrounds who wish to supplement their education with 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.

Please note:

- Be sure to consider the prerequisites for the courses below when planning for this minor.
- For Animal and Veterinary Sciences majors, the only two courses that can be used for both this minor and the AVS major are AVS 303 and AVS 353.
- Some of the courses below may be offered in alternate years. Be sure to check the course descriptions in the online Undergraduate Catalog.

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 6 credits from Group B

Group A - Equine courses

- AVS 196 - Introduction to Equine Cooperative **Credits: 0-1**
- AVS 393 - Training the Standardbred Horse **Credits: 3**
- AVS 397 - Equine Internship **Credits: 1-4**
- AVS 433 - Equine Exercise Physiology **Credits: 3**

Group B - Non-Equine courses relevant to Equine Studies

- ACC 201 - Principles of Financial Accounting **Credits: 3**
- AVS 267 - Swine Production **Credits: 1**
- AVS 268 - Pasture Poultry Production **Credits: 1**
- AVS 368 - Independent Study in the Animal Sciences **Credits: Ar**
- AVS 437 - Animal Diseases **Credits: 3**
- AVS 455 - Animal Nutrition **Credits: 3**
- BIO 377 - Medical Physiology **Credits: 3**
- BMB 322 - Biochemistry **Credits: 3**
- BMB 420 - Infectious Disease **Credits: 3**
- BMB 440 - Introductory Immunology **Credits: 3**
- ECO 120 - Principles of Microeconomics **Credits: 3**
- ECO 154 - Small Business Economics and Management **Credits: 3**
- EHD 202 - Education in a Multicultural Society **Credits: 3**
- PSE 105 - Principles of Sustainable Agriculture **Credits: 3**
- PSE 305 - Problems in Plant, Soil and Environmental Sciences **Credits: 0-16**

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, william.ellis@maine.edu

The Fisheries minor is designed for students in the College of Earth, Life and Health Sciences 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 468 - Lake Ecology **Credits: 3**
- SMS 302 - Oceanography **Credits: 3**

One of the following courses:

- STS 132 - Principles of Statistical Inference **Credits: 3**
- WLE 220 - Introduction to Ecological Statistics **Credits: 4**

One of the following courses:

- ECO 377 - Environmental 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: None

Minimum Grade requirements for courses to count toward minor: C- or higher

Contact Information: Julie Milan, Director of Academic Services, 120 Hitchner Hall, 581-3315, julie.milan@maine.edu

Residency Requirement: 15 of the 18 credits for this minor must be taken at the University of Maine

This minor allows students 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:

- Be sure to consider the prerequisites for the courses below when planning for this minor.
- 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.
- Seniors may take the 500-level graduate classes, if they meet the prerequisite.
- Some of the courses below may be offered in alternate years. Be sure to check the course descriptions in the online Undergraduate Catalog.

Required Course:

- FSN 101 - Introduction to Food and Nutrition **Credits:** 3
- FSN 330 - Introduction to Food Science **Credits:** 3

Plus 12 credits from the following list:

- ECO 190 - World Food Supply, Population and the Environment **Credits:** 3
or
- FSN 270 - World Food and Culture **Credits:** 3
- FSN 103 - Science of Food Preparation **Credits:** 3
- FSN 104 - Science of Food Preparation Lab **Credits:** 1
- FSN 121 - Brewing with Food Science **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 Laws and Regulations **Credits:** 3
 - FSN 438 - Food Microbiology **Credits:** 3
 - FSN 439 - Food Microbiology Laboratory **Credits:** 2
 - 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
- For the following courses, please see the Graduate Catalog for course descriptions:
- FSN 502 - Food Preservation Credits: 3
 - FSN 520 - Food Product Development Credits: 3
 - FSN 555 - Organic and Natural Foods Credits: 3
 - FSN 585 - Sensory Evaluation I Credits: 3
 - FSN 586 - Sensory Evaluation II Credits: 3
 - FSN 587 - Food Analysis Credits: 3

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 122 - 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 of the Forest Environment **Credits: 3**
- SFR 407 - Forest Ecology **Credits: 3**
- SFR 408 - Silviculture **Credits: 3**
- SFR 409 - Forest Ecology and Silviculture Field Laboratory **Credits: 2**
- 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 Sustainable Materials and Technology **Credits: 3**
- SFR 346 - Special Problems in Sustainable Materials and Technology **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 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: None

Minimum Grade requirements for courses to count toward minor: C- or higher

Contact Information: Julie Milan, Director of Academic Services, 120 Hitchner Hall, 581-3315, julie.milan@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:

- Be sure to consider the prerequisites for the courses below when planning for this minor.
- The minor does not lead to credentialing in the field of dietetics without further study.
- Some of the courses below may be offered in alternate years. Be sure to check the course descriptions in the online Undergraduate Catalog.
- FSN graduate-level courses may be acceptable for the minor with permission from the Undergraduate Program Coordinator.

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: 3**
- FSN 104 - Science of Food Preparation Lab **Credits: 1**
- FSN 202 - Foodservice Management **Credits: 3**
- FSN 230 - Nutritional and Medical Terminology **Credits: 1**
- FSN 265 - Application of Nutrition Principles **Credits: 3**
- FSN 270 - World Food and Culture **Credits: 3**
- FSN 301 - Life Cycle Nutrition **Credits: 3**
- FSN 305 - Foods Laboratory **Credits: 1**
- FSN 330 - Introduction to Food Science **Credits: 3**
- FSN 406 - Nutritional Care of Older Adults **Credits: 1**
- FSN 410 - Human Nutrition and Metabolism **Credits: 3**
- FSN 412 - Medical Nutrition Therapy I **Credits: 3**
- FSN 420 - Medical Nutrition Therapy II **Credits: 4**
- FSN 430 - Counseling and Diet Therapy **Credits: 3**
- FSN 436 - Food Laws and Regulations **Credits: 3**
- FSN 482 - Food Chemistry **Credits: 3**

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 Ed Bernard, Undergraduate Coordinator, Hitchner Hall, Room 284, (207) 581-2804, edward.bernard@maine.edu

Courses:

- BMB 300 - General Microbiology **Credits: 3**
- BMB 305 - General Microbiology Laboratory **Credits: 2**
- BMB 323 - Biochemistry Laboratory **Credits: 2**
- BMB 360 - Biochemistry for Molecular and Biomedical Sciences **Credits: 3**
or
- BMB 322 - Biochemistry **Credits: 3**
- Plus 8 credits of upper (300 or higher) level microbiology courses required for the major

Minor: Molecular and Biomedical 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: 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: Melody Neely, Chair, Hitchner Hall Room 117, (207) 581-2810, gundersn@maine.edu or Ed Bernard, Program Coordinator, Hitchner Hall Room 284 (207) 581-2804, edward.bernard@maine.edu

Courses:

- BMB 280 - Introduction to Molecular and Cellular Biology **Credits: 3**
- BMB 323 - Biochemistry Laboratory **Credits: 2**
- BMB 360 - Biochemistry for Molecular and Biomedical Sciences **Credits: 3**
or
- BMB 322 - Biochemistry **Credits: 3**
- 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, Undergraduate Program Coordinator, School of Biology and Ecology, 100 Murray Hall, (207)581-2540, 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, Botany, or Zoology must include 12 PSY course credits from the list below. Students majoring in Psychology must include 12 BIO credits from the list below. Students majoring in other fields must include at least 9 hours of BIO and 9 hours of PSY course credits from the list below. Introductory Chemistry is strongly advised.

Required Core Courses (12 credits)

- BIO 307 - Interdisciplinary Neuroscience **Credits: 3**
- BIO 474 - Neurobiology **Credits: 3**
- PSY 365 - Biopsychology and Behavioral Neuroscience **Credits: 3**
- PSY 466 - Cognitive Neuroscience **Credits: 3**

Related Courses

Choose a minimum of 6 credits as needed to complete the 18 credit requirement. Note, Biology or Zoology majors must choose 6 PSY credits from this list. Psychology majors must choose 6 BIO credits from this list. Students in other majors must choose one BIO course and one PSY course from this list.

- 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 365 - Fundamentals of Evolution **Credits: 3**
- BIO 377 - Medical Physiology **Credits: 3**
- BIO 438 - Morphogenesis in Development and Disease **Credits: 3**
- BIO 480 - Cell Biology **Credits: 3**
- PSY 350 - Cognition **Credits: 3**
- PSY 361 - Sensation and Perception **Credits: 3**
- PSY 401 - Health Psychology **Credits: 3**

Minor: Pre-Medical Studies

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to earn minor: 43

GPA requirements to earn minor: Pre-Medical 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, Undergraduate Program Coordinator, School of Biology and Ecology, 100 Murray Hall, (207)581-2540, 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 Counselor in the Career Center 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, 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**
or
- BIO 208 - Anatomy and Physiology **Credits: 4**
- BMB 322 - Biochemistry **Credits: 3**
with
- BMB 323 - Biochemistry Laboratory **Credits: 2**
- CHY 121 - General Chemistry I **Credits: 3**
with
- CHY 123 - General Chemistry Laboratory I **Credits: 1**
- CHY 122 - General Chemistry II **Credits: 3**
with
- CHY 124 - General Chemistry Laboratory II **Credits: 1**
- CHY 251 - Organic Chemistry I **Credits: 3**
with
- CHY 253 - Organic Chemistry Laboratory I **Credits: 2**
- CHY 252 - Organic Chemistry II **Credits: 3**
with
- CHY 254 - Organic Chemistry Laboratory II **Credits: 2**
- MAT 116 - Introduction to Calculus **Credits: 3**
or
- MAT 126 - Calculus I **Credits: 4**
or
- MAT 136 - Honors Level Calculus I **Credits: 4**
- PHY 111 - General Physics I **Credits: 4**
or
- PHY 121 - Physics for Engineers and Physical Scientists I **Credits: 4**
- PHY 112 - General Physics II **Credits: 4**
or
- PHY 122 - Physics for Engineers and Physical Scientists II **Credits: 4**

Courses recommended but not required for the minor:

- BIO 302 - Critical Reading and Verbal Reasoning **Credits: 3**
- INT 107 - Career Exploration in Health Professions **Credits: 2**
- INT 207 - Orientation to Health Professions **Credits: 2**

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: School of Economics, Room 206 Winslow Hall, (207)581-3150

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, engineering, 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 - SL: Sustainability Science, Policy, and Action **Credits: 3**
- ECO 405 - SL: Sustainable Energy Economics & Policy **Credits: 3**
- EES 324 - Environmental Protection Law and Policy **Credits: 3**

Electives (1-3 courses)

- ECO 180 - Citizens, Energy & Sustainability **Credits: 3**
- ECO 377 - Environmental Economics and Policy **Credits: 3**
- ERS 107 - Energy, Environment, & Climate **Credits: 3**
- PHI 232 - Environmental Ethics **Credits: 3**
- or**
- PHI 432 - Environmental Justice **Credits: 3**
- SFR 455 - Bioenergy Sources, Systems and Environmental Effects **Credits: 3**

Engineering Electives (no more than 2 courses or 6 credits)

- CIE 480 - Wind Energy Engineering **Credits: 3**
- or**
- MEE 480 - Wind Energy Engineering **Credits: 3**
- ECE 450 - Power Electronics **Credits: 3**
- EET 460 - Renewable Energy and Electricity Production **Credits: 3**
- MEE 486 - Refrigeration and Air Conditioning System Design **Credits: 3**
- 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**

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: 2.0

Minimum Grade requirements for courses to count toward minor: None.

Contact Information: School of Economics, 206 Winslow Hall, (207) 581-3150

Core Courses:

- ECO 120 - Principles of Microeconomics **Credits: 3**
- ECO 154 - Small Business Economics and Management **Credits: 3**
- ECO 220 - Intermediate Microeconomic Theory **Credits: 3**

Plus three courses selected from the following:

- ACC 202 - Principles of Managerial Accounting **Credits: 3**
- ECO 377 - Environmental Economics and Policy **Credits: 3**
- ECO 381 - SL: Sustainability Science, Policy, and Action **Credits: 3**
- ECO 488 - Spreadsheet Modeling and Decision Analysis **Credits: 3**
- ECO 497 - Independent Studies **Credits: 1-3**
- EES 140 - Soil Science **Credits: 3**
- EES 324 - Environmental Protection Law and Policy **Credits: 3**
- PSE 105 - Principles of Sustainable Agriculture **Credits: 3**

Minor: Soil 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: 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.

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 at least 8 credits the following list:

- BIO 432 - Biology of the Fungi **Credits:** 4
- CIE 365 - Soil Mechanics **Credits:** 3
- CIE 366 - Soil Mechanics Laboratory **Credits:** 1
- ERS 330 - Earth Materials **Credits:** 4
- ERS 441 - Glaciers and Our Landscape **Credits:** 3
- ERS 361 - The Principles of Geomorphology **Credits:** 3
- WLE 423 - Wetland Ecology and Conservation **Credits:** 4

*Additional options for classes are possible with approval by minor advisor.

Minor: Sustainability

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to earn minor: 18

Minimum Grade requirements for courses to count toward minor: C- or higher is required for required courses

Contact Information: Dr. Kate Ruskin, Program Coordinator, 101 Nutting Hall, (207) 581-3177, katharine.ruskin@maine.edu

Residence Requirement: 9 credits of required courses must be taken at the University of Maine

From business to education to engineering to health sciences, there is growing need to incorporate sustainability practices into all sectors, which requires that professionals throughout the workforce are conversant in sustainability science and can apply its principles to real-world problems. The minor in Sustainability grounds students with a foundational understanding of 1) how our environment works, 2) sustainability sciences, and 3) problem-solving in an interdisciplinary context. Spanning many fields, electives then encourage students to apply the principles of sustainability to their own disciplines, training them to apply sustainability practices in their future professions.

Please Note:

- Be sure to consider the prerequisites for the courses below when planning for this minor.
- The University of Maine limits overlap between a minor and a major to no more than one third of the minor's credit hours.
- New courses are always being created, particularly surrounding emerging topics such as sustainability. Please contact us to inquire about a substitution if you would like to take a course that is related to sustainability but is not yet included on this elective list.

Required Courses:

- EES 100 - Human Population and the Global Environment **Credits:** 3
- ECO 381 - SL: Sustainability Science, Policy, and Action **Credits:** 3

Plus at least 12 credits from the following list:

College of Liberal Arts and Sciences

- ANT 225 - Climate Change, Societies and Cultures **Credits:** 3
- ANT 250 - Conservation Anthropology: The Socio-Cultural Dimension of Environmental Issues **Credits:** 3
- ANT 295 - American Indians and Climate Change **Credits:** 3
- ANT 311 - Geography of Climate Change **Credits:** 3
- ANT 410 - Human Dimensions of Climate Change **Credits:** 3
- CMJ 107 - Communication and the Environment **Credits:** 3

- CMJ 404 - Risk Communication **Credits: 3**
- DIS 450 - Disability: Population-Environment Diversity **Credits: 3**
- HTY 210 - History of Maine **Credits: 3**
- HTY 480 - Global Environmental History **Credits: 3**
- MES 301 - Rachel Carson, Maine, and the Environment **Credits: 3**
- PHI 232 - Environmental Ethics **Credits: 3**
- PHI 332 - Environmental Philosophy **Credits: 3**
- PHI 345 - Global Justice **Credits: 3**
- PHI 432 - Environmental Justice **Credits: 3**
- WGS 230 - Women, Health, and the Environment **Credits: 3**

College of Earth, Life and Health Sciences

- AVS 254 - Introduction to Animal Microbiomes **Credits: 3**
- AVS 446 - Forage Science and Range Management **Credits: 3**
- AVS 477 - Zoonoses and Animal Health **Credits: 3**
- BMB 300 - General Microbiology **Credits: 3**
and
- BMB 305 - General Microbiology Laboratory **Credits: 2**
- BIO 122 - Biology: The Living Science **Credits: 3**
- BIO 205 - Field Natural History of Maine **Credits: 4**
- BIO 309 - Sustainability and Conservation Travel Study **Credits: 3**
- BIO 311 - Animal Ecophysiology **Credits: 3**
- BIO 319 - General Ecology **Credits: 3**
- BIO 342 - Plants in Our World **Credits: 3**
- BIO 431 - Emerging Infectious Diseases **Credits: 4**
- BIO 455 - Biological Invasions **Credits: 3**
- ECO 180 - Citizens, Energy & Sustainability **Credits: 3**
- ECO 190 - World Food Supply, Population and the Environment **Credits: 3**
- ECO 377 - Environmental Economics and Policy **Credits: 3**
- ECO 405 - SL: Sustainable Energy Economics & Policy **Credits: 3**
- ECO 477 - Natural Resource Economics and Policy **Credits: 3**
- EES 324 - Environmental Protection Law and Policy **Credits: 3**
- EES 351 - Energy, Wealth, and Power: a Biophysical Systems view of Nature and Society **Credits: 3**
- EES 398 - Special Seminar In Ecology and Environmental Science **Credits: 1-3**
- ERS 425 - How to Build a Habitable Planet **Credits: 3**
- ERS 441 - Glaciers and Our Landscape **Credits: 3**
- ERS 350 - Fresh-Water Flow **Credits: 3**
- ERS 102 - Environmental Geology **Credits: 4**
- ERS 103 - Dynamic Earth **Credits: 3**
- ERS 107 - Energy, Environment, & Climate **Credits: 3**
- ERS 121 - Humans and Global Change **Credits: 3**
- ERS 152 - Earth's Changing Climate **Credits: 3**
- ERS 201 - Global Environmental Change **Credits: 4**
- FSN 270 - World Food and Culture **Credits: 3**
- FSN 440 - Utilization of Aquatic Food Resources **Credits: 3**
- PSE 105 - Principles of Sustainable Agriculture **Credits: 3**
- PSE 312 - Sustainable Food Systems: Challenges and Opportunities **Credits: 3**
- PSE 360 - Agroecology and Sustainable Cropping Systems **Credits: 4**
- PSE 430 - SL: Sustainable Horticulture and Agriculture Capstone **Credits: 3**
- PSE 440 - Environmental Soil Chemistry and Plant Nutrition **Credits: 3**
- SFR 215 - Introduction to Sustainable Materials and Technology **Credits: 3**

- SFR 220 - Environment and Society **Credits: 3**
- SFR 349 - Applied Forest Ecology and Silviculture **Credits: 4**
- SFR 437 - Ecotourism: Principles, Trends, and Issues **Credits: 3**
- SFR 446 - Forest Resources Policy **Credits: 3**
- SFR 455 - Bioenergy Sources, Systems and Environmental Effects **Credits: 3**
- SFR 456 - Physical and Mechanical Properties of Sustainable Materials **Credits: 4**
- SFR 477 - Forest Landscape Management and Planning **Credits: 3**
- SFR 479 - Environmental Attitudes and Behaviors **Credits: 3**
- SFR 493 - Sustainable Tourism Planning **Credits: 3**
- SFR 452 - Environmental Interpretation **Credits: 4**
- SMS 100 - Introduction to Ocean Science **Credits: 3**
- SMS 230 - Introduction to Marine Policy and Fisheries Management **Credits: 3**
- SMS 308 - Conservation and Ecology of Marine Mammals **Credits: 3**
- SMS 321 - Introduction to Fisheries Science **Credits: 3**
- SMS 354 - The Arctic Ocean: A Question-based Approach to Learning Marine Sciences **Credits: 3**
- WLE 230 - Introduction to Wildlife Conservation **Credits: 3**
- WLE 323 - Introduction to Conservation Biology **Credits: 3**
- WLE 340 - Freshwater Fisheries Ecology and Management **Credits: 3**
and
- WLE 341 - Freshwater Fisheries Laboratory **Credits: 1**
- WLE 410 - Wildlife Population Dynamics and Conservation **Credits: 3**
and
- WLE 411 - Wildlife Population Dynamics Lab **Credits: 1**
- WLE 423 - Wetland Ecology and Conservation **Credits: 4**
- WLE 431 - Wildlife Management in Forestry **Credits: 3**
- WLE 455 - Wildlife-Habitat Evaluation **Credits: 2**
- WLE 461 - Human Dimensions of Fisheries and Wildlife Conservation **Credits: 3**
- WLE 470 - Wildlife Policy and Administration **Credits: 3**

College of Engineering

- CET 412 - Sustainable Population and Environmental Design and Construction **Credits: 3**
- CIE 210 - Sustainability in Engineering **Credits: 3**
- ECE 467 - Solar Cells and Their Applications **Credits: 3**
- EET 460 - Renewable Energy and Electricity Production **Credits: 3**
- MEE 480 - Wind Energy Engineering **Credits: 3**

College of Education and Human Development

- KPE 411 - Ethics and Social Justice in Outdoor Leadership **Credits: 3**
- PAX 370 - Building Sustainable Communities **Credits: 3**
- PAX 380 - Ecovillages and Ecocities: Models of Global Restoration **Credits: 3**

Minor: Sustainable Agriculture

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to earn minor: 22

GPA requirements to earn minor: None

Minimum Grade requirements for courses to count toward minor: C- or higher is required for EES 140/141 and all PSE courses

Contact Information: Julie Milan, Director of Academic Services, 120 Hitchner Hall, 581-3315, julie.milan@maine.edu

Residency Requirement: The 15 credits of required courses must be taken at the University of Maine

This minor provides students foundational introductory content related to plant and soil science, and an overview of modern agricultural production systems, focusing on environmental and economic sustainability. Advanced coursework encourages more in depth study in selected areas of production and food systems.

Please note:

- Be sure to consider the prerequisites for the courses below when planning for this minor.
- The following courses are not acceptable course choices toward the minor for Environmental Horticulture majors: PSE 403 and PSE 415.
- Some of the courses below may be offered in alternate years. Be sure to check the course descriptions in the online Undergraduate Catalog.

Required Courses:

- EES 140 - Soil Science **Credits:** 3
- EES 141 - Soil Science Laboratory **Credits:** 1
- PSE 100 - Plant Science **Credits:** 4
- PSE 105 - Principles of Sustainable Agriculture **Credits:** 3
- PSE 360 - Agroecology and Sustainable Cropping Systems **Credits:** 4

Plus at least 7 credits from the following list:

- PSE 203 - Weed Biology and Identification **Credits:** 1
- PSE 260 - Pesticide Applicator Certification **Credits:** 1
- PSE 261 - Nutrient Management **Credits:** 1
- PSE 262 - Introduction to Cannabis Cultivation and Science **Credits:** 1
- PSE 263 - Plant Health Diagnostics **Credits:** 1
- PSE 264 - Introduction to Composting **Credits:** 1
- PSE 265 - Soil Health for Farm Resilience and Climate Mitigation **Credits:** 1
- PSE 270 - Wild Blueberry Production **Credits:** 1
- PSE 312 - Sustainable Food Systems: Challenges and Opportunities **Credits:** 3
- PSE 403 - Weed Ecology and Management **Credits:** 3
- PSE 415 - Greenhouse Management **Credits:** 4
- PSE 440 - Environmental Soil Chemistry and Plant Nutrition **Credits:** 3

Minor: Sustainable Food Systems

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to earn minor: 21

GPA requirements to earn minor: None

Minimum Grade requirements for courses to count toward minor: C- or higher is required for all PSE courses

Contact Information: Julie Milan, Director of Academic Services, 120 Hitchner Hall, 581-3315, julie.milan@maine.edu

Residency Requirement: The 9 credits of required courses and 6 of the elective credits must be taken at the University of Maine

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:

- Be sure to consider the prerequisites for the courses below when planning for this minor.
- This minor is not an option for Sustainable Agriculture majors.
- No more than 9 total credits may be from 100-level classes.
- Some of the courses below may be offered in alternate years. Be sure to check the course descriptions in the online Undergraduate Catalog.

Required Courses:

- ECO 190 - World Food Supply, Population and the Environment **Credits: 3**
or
- FSN 270 - World Food and Culture **Credits: 3**
or
- PSE 312 - Sustainable Food Systems: Challenges and Opportunities **Credits: 3**

- FSN 101 - Introduction to Food and Nutrition **Credits: 3**
- PSE 105 - Principles of Sustainable Agriculture **Credits: 3**

Plus at least 12 credits from the following list:

- ANT 212 - The Anthropology of Food **Credits: 3**
- ECO 381 - SL: Sustainability Science, Policy, and Action **Credits: 3**
- FSN 330 - Introduction to Food Science **Credits: 3**
- FSN 436 - Food Laws and Regulations **Credits: 3**
- FSN 440 - Utilization of Aquatic Food Resources **Credits: 3**
- FSN 450 - Food Biotechnology **Credits: 3**
- MGT 325 - Principles of Management and Organization **Credits: 3**
- MGT 327 - Business and Society **Credits: 3**
- MGT 342 - Small Business Management **Credits: 3**
- PAX 370 - Building Sustainable Communities **Credits: 3**
- PSE 215 - Vegetable and Fruit Production **Credits: 3**
- PSE 260 - Pesticide Applicator Certification **Credits: 1**
- PSE 261 - Nutrient Management **Credits: 1**
- PSE 262 - Introduction to Cannabis Cultivation and Science **Credits: 1**
- PSE 263 - Plant Health Diagnostics **Credits: 1**
- PSE 264 - Introduction to Composting **Credits: 1**
- PSE 265 - Soil Health for Farm Resilience and Climate Mitigation **Credits: 1**
- PSE 270 - Wild Blueberry Production **Credits: 1**
- PSE 360 - Agroecology and Sustainable Cropping Systems **Credits: 4**
- PSE 440 - Environmental Soil Chemistry and Plant Nutrition **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: Ann Dieffenbacher-Krall, Undergraduate Program Coordinator, School of Biology and Ecology, 100 Murray Hall, (207)581-2540, 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. Students must complete a minimum of 12 credits for this minor with courses that are not otherwise used to fulfill a requirement for their major, another minor, or a concentration. 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 this list Credits: 14

- AVS 254 - Introduction to Animal Microbiomes **Credits:** 3
- BIO 205 - Field Natural History of Maine **Credits:** 4
- BIO 307 - Interdisciplinary Neuroscience **Credits:** 3
- BIO 309 - Sustainability and Conservation Travel Study **Credits:** 3
- BIO 311 - Animal Ecophysiology **Credits:** 3
- BIO 319 - General Ecology **Credits:** 3
- 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 336 - Developmental Biology **Credits:** 4
- BIO 350 - Concepts and Applications of Genetics **Credits:** 3
- BIO 353 - Invertebrate Zoology **Credits:** 4
- BIO 354 - Animal Behavior **Credits:** 3
- BIO 365 - Fundamentals of Evolution **Credits:** 3
- BIO 377 - Medical Physiology **Credits:** 3
- BIO 378 - Medical Physiology Laboratory **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 402 - Capstone Experience in Biological Sciences **Credits:** 3
- BIO 411 - Insect Ecology **Credits:** 3
- BIO 429 - Plant-Insect Interaction **Credits:** 3
- BIO 430 - Ecology and Systematics of Aquatic Insects **Credits:** 4
- BIO 431 - Emerging Infectious Diseases **Credits:** 4

- BIO 432 - Biology of the Fungi **Credits: 4**
- BIO 433 - Mammalogy **Credits: 4**
- BIO 434 - Avian Biology and Ecology **Credits: 3**
- BIO 437 - Avian Biology and Ecology Laboratory **Credits: 1**
- BIO 438 - Morphogenesis in Development and Disease **Credits: 3**
- BIO 450 - Histology **Credits: 4**
- BIO 455 - Biological Invasions **Credits: 3**
- BIO 463 - River Ecology **Credits: 4**
- BIO 464 - Taxonomy of Vascular Plants **Credits: 4**
- BIO 468 - Lake Ecology **Credits: 3**
- BIO 474 - Neurobiology **Credits: 3**
- BIO 476 - Paleocology **Credits: 4**
- BIO 480 - Cell Biology **Credits: 3**
- BIO 483 - Cell Biology Laboratory **Credits: 2**
- BMB 155 - Genome Discovery II: From DNA to Genes **Credits: 3**
or
- HON 155 - Genome Discovery II: From DNA to Genes **Credits: 3**
- BMB 280 - Introduction to Molecular and Cellular Biology **Credits: 3**
- BMB 300 - General Microbiology **Credits: 3**
- BMB 305 - General Microbiology Laboratory **Credits: 2**
- BMB 400 - Molecular Genetics **Credits: 3**
- BMB 402 - Introduction to Bioinformatics **Credits: 3**
- BMB 420 - Infectious Disease **Credits: 3**
- BMB 421 - Infectious Disease Laboratory **Credits: 2**
- BMB 440 - Introductory Immunology **Credits: 3**
- BMB 441 - Introductory Immunology Laboratory **Credits: 1**
- EES 140 - Soil Science **Credits: 3**
- EES 141 - Soil Science Laboratory **Credits: 1**
- EES 475 - Field Studies in Ecology **Credits: 1-3**
- PSE 457 - Plant Pathology **Credits: 4**
- SMS 300 - Marine Ecology **Credits: 3**
- SMS 308 - Conservation and Ecology of Marine Mammals **Credits: 3**
- WLE 200 - Ecology **Credits: 3**
- WLE 201 - Ecology Laboratory **Credits: 3**
- WLE 423 - Wetland Ecology and Conservation **Credits: 4**
A - AVS 254, BIO 329, BIO307, BIO311, BIO 326, , BIO335, BIO336, BIO353, BIO 354, BIO377, BIO 411, BIO429,
BIO430, BIO433, BIO 434, BIO474, SMS 308

Non-Degree Certificates

Certificate: Environmental Horticulture Studies

OVERVIEW OF REQUIREMENTS

Minimum number of credits required to earn certificate: 14

Minimum Cumulative GPA required to earn certificate: None

Minimum Grade requirements for courses to count toward certificate: C- or higher is required for all PSE courses.

Other GPA requirements to earn certificate: None.

Contact Information: Mary Fernandez, Student Academic Services Coordinator, 201A Rogers Hall (207) 581-2938, fern@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 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 PSE 100 Plant Science.

The two areas of focus can be started upon completion of the Core.

Below are the required courses for the EHS Certificate:

Plant Materials - the Core (14 Credits)

- PSE 100 - Plant Science **Credits:** 4
- PSE 110 - Introduction to Horticulture **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 (21 credits)

The CORE plus (7 cr.)

- PSE 224 - Site Analysis, Grading and Drainage **Credits:** 3
- PSE 227 - Landscape Design I **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, 207 Rogers Hall, (207) 922-7475, rcausey@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.

Below are the required courses for the EQS Certificate:

The student must complete 12 or more credits from this list:

- AVS 196 - Introduction to Equine Cooperative **Credits:** 0-1
- AVS 203 - Equine Management **Credits:** 3
- AVS 303 - Equine Management Cooperative **Credits:** 2
- AVS 353 - Equine Reproduction and Breeding Management **Credits:** 3
- AVS 368 - Independent Study in the Animal Sciences **Credits:** Ar
- AVS 393 - Training the Standardbred Horse **Credits:** 3
- AVS 397 - Equine Internship **Credits:** 1-4
- AVS 433 - Equine Exercise Physiology **Credits:** 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 addresses the changing needs of schools, children and families.

Undergraduate majors are offered in Elementary Education; Secondary Education, Kinesiology and Physical Education with academic specialization options of pre-Athletic Training, Exercise Science, Outdoor Leadership and Teaching/Coaching; and Child Development and Family Relations with an academic specialization options in Early Childhood Education and Individual & Family Studies. All majors emphasize a diverse liberal arts background and highly relevant professional practicums and internships.

Educator preparation programs are currently accredited by the Council for Accreditation of Educator Preparation (CAEP). The programs are also approved by the Maine Department of Education. Partnerships with area PreK-12 schools provide a Professional Development School model and realistic teaching and learning settings for students and faculty, beginning in the first year of study. In addition, a campus preschool serves as a lab school where Early Childhood Education students have classes and internship opportunities.

All external transfer students for any College of Education and Human Development program must have a minimum G.P.A. of 2.5 (minimum G.P.A. of 2.75 in some licensure programs) from an accredited institution. Transfer students wishing to enroll in any of the teaching certification programs must demonstrate content area competency through either the successful completion of one or more Praxis exams or the completion of specific content area coursework with a G.P.A. therein of at least 3.0. Since these requirements vary by program and the strategies available may vary depending on a student's prior institution, transfer students should consult with the Advising Center to develop a plan for their specific circumstances.

ACADEMIC PROGRAMS:

Bachelor of Science in:

- **Child Development and Family Relations**
 - Early Childhood Education (teacher certification option)
 - Individual and Family Studies
- **Elementary Education**
 - Concentration Areas:
 - English
 - French
 - Child Development
 - Life and Physical Sciences
 - Mathematics
 - Social Studies
 - Spanish
 - Special Education
- **Kinesiology and Physical Education**
 - Concentration Areas:
 - pre-Athletic Training
 - Exercise Science/Science
 - Outdoor Leadership
 - Teaching/Coaching (teacher certification option)

- **Secondary Education**
 - Concentration Areas:
 - English
 - World Languages (Spanish and French)
 - Mathematics
 - Life Sciences
 - Physical Sciences
 - Social Studies

MINORS:

- Child Development and Family Relations
- Education
- Exercise Science
- Outdoor Leadership
- Peace and Reconciliation Studies

College of Education and Human Development Notes:

Teacher Certification: The College of Education and Human Development's Elementary, Early Childhood, and Secondary Education programs and the teacher preparation program in Kinesiology and Physical Education have been approved by the Maine Department of Education. Upon successful completion of all program requirements students are recommended for Initial Maine Teacher Certification in their area of study. Teacher certification regulations are determined by the Maine Legislature and teacher certification is granted by the Maine Department of Education.

Ethics Requirement -The University's Ethic Requirement is fulfilled through a series of courses within the Education and Human Development degree programs

Note: The Maine Department of Education charges \$100.00 for initial certification. Certification requirements are subject to change. For updated information, please reach out to Erin Straine in the Office of Field Experience (erin.straine@maine.edu).

Undergraduate Program Contact

Ezekiel Kimball
 129 Shibles Hall
 (207) 581-2485
 ezekiel.kimball@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

Jim Artesani
 144 Shibles Hall
 (207) 581-4061
 arthur.artesani@maine.edu

Major

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: A C or higher is required in CHF 200 and CHF 201. Students in the Early Childhood Education concentration are required to earn a B or higher in CHF 200, CHF 201, CHF 203, CHF 303, CHF 321, CHF 322, CHF 329, CHF 331 or EHD 203, CHF 304 or EHD 400, CHF 424, CHF 450, EDT 400, EHD 101, EHD 202, EHD 204, EHD 301, ERL 317, ERL 319, and SED 302.

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

Required Course(s) for fulfilling Capstone Experience: CHF 423 (Individual and Family Studies Concentration, Early Childhood Professional Concentration, and Research Concentration) or CHF 424 (Early Childhood Education Concentration)

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

Transfer Policy

Students at the University of Maine wishing to transfer to this major should have a cumulative GPA of 2.75 for Early Childhood Education concentration or a 2.5 cumulative GPA for all other concentrations.

Requirements:

English:

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

Communication:

Choose one from the following list:

CMJ 102 - Fundamentals of Interpersonal Communication Credit: 3

CMJ 103 - Public Speaking Credit: 3

CMJ 106 - Storytelling Credit: 3

Math:

MAT 107 - Elementary Descriptive Geometry Credit: 3 and MAT 108 - Elementary Numerical Mathematics From A Modern Perspective Credit: 3 are required for the Early Childhood Education concentration. The Research concentration requires STS 132 - Principles of Statistical Inference Credit: 3

Psychology:

PSY 100 - General Psychology Credit: 3

Child Development and Family Relations Concentrations

CORE COURSES

- CHF 200 - Family Interaction **Credits: 3**
- CHF 201 - Introduction to Child Development **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**
(Students in this major must take 3-6 credits)

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

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.

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 Council for the Advancement of Educator Preparation (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 K-3 classroom, an average GPA of 3.0 or higher in MAT 107 and 108, and minimum of 3.0 in ENG 101. If the minimum grade requirement is not met, a passing score for the state of Maine for the appropriate PRAXIS CORE subtest(s) is sufficient. **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 more information about the state required PRAXIS exam, visit <http://www.umaine.edu/edhd/academic-programs/praxis-test-series/>.

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**

Math Requirement

The minimum GPA must be 3.0 or higher. If the minimum GPA requirement is not met, a passing score for the state of Maine for the appropriate PRAXIS CORE math subtest is sufficient.

- MAT 107 - Elementary Descriptive Geometry **Credits: 3**
- MAT 108 - Elementary Numerical Mathematics From A Modern Perspective **Credits: 3**

English Requirement

ENG 101 and one English Literature course from the following list. The minimum GPA must be 3.0 or higher for the chosen English Literature class and ENG 101. If the minimum GPA requirement is not met, a passing score for the state of Maine for the appropriate PRAXIS CORE reading and writing subtests are sufficient.

- ENG 101 - College Composition **Credits: 3**
AND one English Literature class from the list below:
- ENG 129 - Topics in English **Credits: 3**
- ENG 131 - The Nature of Story **Credits: 3**
- ENG 170 - Foundations of Literary Analysis **Credits: 3**
- ENG 205 - An Introduction to Creative Writing **Credits: 3**
- ENG 222 - Reading Poems **Credits: 3**
- ENG 229 - Topics in Literature **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 256 - British Women's Literature **Credits: 3**

Students enrolled in Honor College

Students enrolled in the Honors College can complete the English Literature requirement within Elementary Education, by successfully completing two of the following courses: The minimum GPA must be 3.0 or higher. If the minimum GPA requirement is not met, a passing score for the state of Maine for the appropriate PRAXIS CORE subtest(s) is sufficient.

- HON 111 - Civilizations: Past, Present and Future I **Credits: 4**
- HON 112 - Civilizations: Past, Present and Future II **Credits: 4**
- HON 211 - Civilizations: Past, Present and Future III **Credits: 4**
- HON 212 - Civilizations: Past, Present and Future IV **Credits: 4**

Social Studies Requirement

The Social Studies requirement can be fulfilled with two courses from the following areas.

- History (HTY)
- Anthropology (ANT)
- Geography (GEO)
- Economics (ECO)
- Political Science/Government (POS)
- Native American Studies (NAS)

Students enrolled in Honor College

Students enrolled in the Honors College can complete the Social Studies requirement by successfully completing two of the following courses.

- HON 111 - Civilizations: Past, Present and Future I **Credits: 4**
- HON 112 - Civilizations: Past, Present and Future II **Credits: 4**
- HON 211 - Civilizations: Past, Present and Future III **Credits: 4**
- HON 212 - Civilizations: Past, Present and Future IV **Credits: 4**

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 B, and achieve an overall cumulative GPA of 2.75. They must also fulfill all portfolio requirements, including minimum grades (or passing appropriate Praxis CORE subtests) and documentation of the field experience and CHRC approval.

- CHF 201 - Introduction to Child Development **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**
- 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 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
- EHD 203 - Educational Psychology **Credits: 3**
- 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 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 317 - Children's Literature **Credits: 3**
- ERL 319 - Teaching Reading and Language Arts in Preschool to Grade 3 **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.

3. 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 316 - Literacy and the Youngest Learner **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**

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 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 Placement in Early Childhood Education (3-6 cr) in a program/agency that supports young children birth to age 8.

4. 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 132 - 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 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 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.

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 (waived for transfer students)
- 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 - Public Speaking **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

Elementary Education

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to graduate: 120

Minimum Cumulative GPA required to graduate: 2.00

Minimum Grade requirements for courses to count toward major: 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, and 3 credits of EHD 498 for students in the student teaching option or EHD 493 for students in the non-student teaching option.

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

This program is offered at the main campus of the University of Maine in Orono

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 Council for the Advancement of Educator Preparation (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 K-8 classroom, a GPA of 3.0 in MAT 107 and MAT 108, and a GPA of a 3.0 in ENG 101 and three credits of an English Literature course. If the minimum GPA requirement is not met, a passing score for the state of Maine for the appropriate PRAXIS CORE subtest(s) is sufficient. **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 only if they are not earning a GPA of 3.0 or higher in each subtest area (social studies, science) 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
- *Life/Physical Sciences
- *Social Studies
- *Math
- *Languages (Spanish and French)
- *Child Development
- *Special Education

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**

Math Requirement

The minimum GPA must be 3.0 or higher. If the minimum GPA requirement is not met, a passing score for the state of Maine for the appropriate PRAXIS CORE subtest(s) is sufficient.

- MAT 107 - Elementary Descriptive Geometry **Credits: 3**
- MAT 108 - Elementary Numerical Mathematics From A Modern Perspective **Credits: 3**

English Literature Requirement

ENG 101 and one English Literature course from the following list. The minimum GPA must be 3.0 or higher for this class and ENG 101. If the minimum GPA requirement is not met, a passing score for the state of Maine for the appropriate PRAXIS CORE subtest(s) is sufficient.

- ENG 101 - College Composition **Credits: 3**
AND one English Literature class from the list below:
- ENG 129 - Topics in English **Credits: 3**
(First year students only)
- ENG 131 - The Nature of Story **Credits: 3**
- ENG 170 - Foundations of Literary Analysis **Credits: 3**
- ENG 205 - An Introduction to Creative Writing **Credits: 3**
- ENG 222 - Reading Poems **Credits: 3**
- ENG 229 - Topics in Literature **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 256 - British Women's Literature **Credits: 3**

Students enrolled in Honors College

Students enrolled in the Honors College can complete the English Literature requirement within Elementary Education, by successfully completing two of the following courses. The minimum GPA must be 3.0 or higher. If the minimum GPA requirement is not met, a passing score for the state of Maine for the appropriate PRAXIS CORE subtest(s) is sufficient.

- HON 111 - Civilizations: Past, Present and Future I **Credits: 4**
- HON 112 - Civilizations: Past, Present and Future II **Credits: 4**
- HON 211 - Civilizations: Past, Present and Future III **Credits: 4**
- HON 212 - Civilizations: Past, Present and Future IV **Credits: 4**

Social Studies Requirement

The Social Studies requirement can be fulfilled with two courses from the following areas. The minimum GPA must be 3.0 or higher, or students can take the corresponding Praxis 2 content test for Elementary.

- History (HTY)
- Anthropology (ANT)
- Geography (GEO)
- Economics (ECO)
- Political Science/Government (POS)
- Native American Studies (NAS)

Students enrolled in Honors College

Students enrolled in the Honors College can complete the Social Studies requirement by successfully completing two of the following courses. The minimum GPA must be 3.0 or higher, or students can take the corresponding Praxis 2 content test for Elementary.

- HON 111 - Civilizations: Past, Present and Future I **Credits: 4**
- HON 112 - Civilizations: Past, Present and Future II **Credits: 4**
- HON 211 - Civilizations: Past, Present and Future III **Credits: 4**
- HON 212 - Civilizations: Past, Present and Future IV **Credits: 4**

Science Requirement

The Science requirement can be fulfilled with two science courses, excluding FSN and KPE courses. The minimum GPA must be 3.0 or higher, or students can take the corresponding Praxis 2 content test for Elementary.

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 B, and achieve an overall cumulative GPA of 2.75. They must also fulfill all portfolio requirements, including minimum grades (or passing appropriate Praxis CORE subtests) and documentation of the field experience and CHRC approval.

- CHF 201 - Introduction to Child Development **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**
- 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**
- 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
 - 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:** 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
 - 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.

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 Specialization Electives
- Take and Pass Praxis CORE if you are not meeting min 3.0 GPA in English credits
- CHRC

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 Specialization Electives
- Take and pass Praxis CORE if you are not meeting min 3.0 GPA in MAT 107, MAT 108
--Apply for Teacher Candidacy--

Third Year

- 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 317 - Children's Literature **Credits:** 3
- ERL 319 - Teaching Reading and Language Arts in Preschool to Grade 3 **Credits:** 3

- SED 302 - Adapting Instruction for Students with Disabilities **Credits: 3**
- General Education Requirements and Specialization Electives
--Take & Pass Praxis II if minimum grade requirements not met for social studies and science prior to applying for EHD 490--

Fourth Year - Fall Semester

- EHD 400 - Field Observation (Activity) **Credits: 1-6**
(Students in this major must take 3-6 credits)
- 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**
(Students in this major must take 12 credits)
- EHD 493 - Alternative Practicum and Seminar in Education **Credits: 3 - 6** **NOT** Student Teaching. Students who are in a teacher preparation program but choose to complete EHD 493 instead of student teaching will not be considered a graduate of a NCATE/CAEP approved program or a state approved program.
or
- EHD 498 - Seminar for Interns **Credits: 1-3**

Academic Specialization

- 24 credits hours
- GPA of 2.5 in the specialization to graduate
- At least 12 credits must be in courses at the 200 level or above with the exception of Mathematics and Science specializations.

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 or STS

4) Life/Physical Sciences

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 122 - Biology: The Living Science **Credits: 3**
- BIO 123 - 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:

- AST 109 - Introduction to Astronomy **Credits: 3**
- AST 110 - Introduction to Astronomy Laboratory **Credits: 1**
- CHY 101 - Chemistry for Everyday Living **Credits: 3**
- CHY 102 - Chemistry for Everyday Living Laboratory **Credits: 1**
- ERS 101 - Introduction to Earth Science **Credits: 4**
- ERS 102 - Environmental Geology **Credits: 4**
- ERS 103 - Dynamic Earth **Credits: 3**
- PSE 100 - Plant Science **Credits: 4**
- chemistry, physics, geology, earth science, soil science, astronomy, meteorology, oceanography

Note: The State of Maine does not accept all science courses at the University so check with the Advising Center and/or the state of Maine website.

5) 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

6) Child Development

- 24 credits of CHF

7) Special Education

A total of 24 credit hours, distributed according to the following rules:

Required Courses

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

- SED 420 Special Education Law (UMaine Machias course)
 - SED 425 Assessment (UMaine Machias course)
 - SED 435 Program Planning (UMaine Machias course)
 - SED 445 Behavioral Support Systems and Strategies (UMaine Machias course)
 - SED 455 Transition Issues for Students with Disabilities (UMaine Machias course)
- Two electives from:**
- SED 202 - Communication & Collaboration in Special Education (UMaine Machias course)
 - SED 330 - Math in Special Education (UMaine Machias course)
 - SED 362 - Typical and Atypical Expressive and Receptive Language (UMaine Machias course)
 - SED 365 - Differentiated instructional strategies (UMaine Machias course)
 - SED 370 - Teaching reading and writing to children with special needs (UMaine Machias course)
 - SED 380 - Teaching Students with Autism Spectrum Disorders (UMaine Machias course)

Kinesiology and Physical Education

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to graduate: 120

Minimum Cumulative GPA required to graduate: 2.0

Required Course(s) for fulfilling Capstone Experience: KPE 427 or EHD 493

Courses satisfying the writing intensive requirement within the major: Exercise Science - Science: KPE 425; Exercise Science-Outdoor Leadership: EHD 202; Teaching/Coaching: KPE 425

Contact Information: Diane LeGrande, 103 Lengyel Hall, 581-2466, legrande@maine.edu

Students in the Kinesiology and Physical Education (KPE) programs pursue a concentration in areas such as Teaching / Coaching (leading to teacher certification), Exercise Science, or Outdoor Leadership. Students interested in completing the coursework necessary for admission to a graduate program in athletic training should consult their advisor. Upon graduation, students become teachers, coaches, fitness specialists/administrators, 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 bio-mechanical 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.

Teaching/Coaching Certification Concentration

Teaching/Coaching Concentration 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 Council for the Accreditation of Educator Preparation (CAEP).

Within the Teaching/Coaching Concentration program there are two options of study:

Health Option: The Health Option focuses on the core pedagogical requirements for teaching health courses in schools. Students that complete the health option fulfill the requirements to receive endorsement in teaching Health Education at the elementary and secondary level in the State of Maine, in addition to their certification to teach elementary and secondary physical education.

Liberal Arts Option: The Liberal Arts Option provides students with the opportunity to take a variety of courses to fulfill a well-rounded education. Students that complete the liberal arts concentration fulfill the requirements to teach elementary and secondary physical education.

Exercise Science Concentration

Within the Exercise Science Concentration program there are two options of study.

Science 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.

Outdoor Leadership Option: The Outdoor Leadership option prepares students for future careers in outdoor-based non-profits, businesses, and educational settings. Students in this program will take all of the core Outdoor Leadership courses, along with courses in exercise science, physical education, pedagogy, Maine studies, natural resources, and leadership studies. In addition, students in this concentration are required to pursue 12-15 credits of outdoor skills or field experience courses of their choice.

Required Courses in Suggested Sequence for the B.S. in Kinesiology and Physical Education - Teaching/Coaching Concentration

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 Core 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 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
- PSY 100 - General Psychology **Credits:** 3
- General Education Courses Credits: 6

Second Year - First Semester

- EHD 202 - Education in a Multicultural Society **Credits:** 3
- KPE 344 - Principles of Coaching **Credits:** 3
- Computer or Math Course Credits: 3
- General Education Course Credits: 3
- Take Praxis CORE
- CHRC

Second Year - Second Semester

- EHD 203 - Educational Psychology **Credits:** 3
- KPE 262 - Methods of Teaching Physical Activity **Credits:** 3
- KPE 270 - Motor Development and Learning **Credits:** 3
- KPE 271 - Professional Dispositions and Research in Physical and Health Education **Credits:** 3
- KPE skills Course Credits: 3
- Self-Initiated Field Observation-Five (5) full days (During Winter/Spring Break or May/June)

Third Year - First Semester

- EDT 400 - Integrating Technology for Teaching and Learning **Credits: 3**
- KPE 367 - Adapted Physical Education **Credits: 3**
- KPE 376 - Kinesiology **Credits: 3**
- Concentration Courses Credits: 6
- KPE skills course Credits: 3
- Submit Teacher Candidacy E-Folio by semester deadline.

Third Year - Second Semester

- KPE 364 - Elementary School Physical Education **Credits: 3**
- KPE 378 - Physiology of Exercise **Credits: 3**
- Concentration Courses Credits: 6
- KPE skills course Credits: 3
- Take Praxis II before September 1st

Fourth Year - First Semester

- KPE 365 - Curriculum and Instruction in Secondary Physical Education **Credits: 3**
- Concentration Course Credits: 3
- General Education Course Credits: 3
- KPE skills Course Credits: 3
- Math General Education Course Credits: 3

Fourth Year - Second Semester

- EHD 498 - Seminar for Interns **Credits: 1-3**
(Students in this major must take 3 credits)
- EHD 499 - Student Teaching K-12 (Kinesiology and Physical Education) **Credits: 1 - 12**
(Students in this major must take 12 credits)

Teaching/Coaching Concentration Health Option Required Courses (15 credits)

Required Courses by the State of Maine (9 credits)

- KPE 425 - Health Promotion and Disease Prevention **Credits: 3**
- KPE 483 - The Comprehensive School Health Program **Credits: 3**
- KPE 484 - Methodology of Teaching Health Education **Credits: 3**

Health Course Options (6 credits)

- CHF 200 - Family Interaction **Credits: 3 ***
- CHF 201 - Introduction to Child Development **Credits: 3 ***
- CHF 351 - Human Sexuality **Credits: 3 ***
- EES 100 - Human Population and the Global Environment **Credits: 3**

- FSN 101 - Introduction to Food and Nutrition **Credits:** 3 **
 - PSY 224 - Psychology of Adolescence **Credits:** 3
- Notes: * - Meets the General Education Human Values and Social Context requirement.
 ** - Satisfies the General Education Applications of Scientific Knowledge requirement.

Notes

- 1) A grade of B- or higher in EDT 400, EHD 202, EHD 203, KPE 262, and KPE 367 is required.
- 2) Required courses for fulfilling capstone experience: 12 credits of EHD 499 for students in the Teaching Option; 3 credits of EHD 493 for students in the non-teaching option.
- 3) In order to be admitted to teacher candidacy and upper level KPE courses, students must have a cumulative GPA of 2.75.

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

First Year - First Semester

- BIO 100 - Basic Biology **Credits:** 4 (minimum grade of C- or higher is required)
- EHD 100 - New Student Seminar in Education and Human Development **Credits:** 1
- ENG 101 - College Composition **Credits:** 3
- 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 262 - Methods of Teaching Physical Activity **Credits:** 3
- PSY 100 - General Psychology **Credits:** 3
- General Education Courses Credits: 6

Second Year - First Semester

- BMB 207 - Fundamentals of Chemistry **Credits:** 3
and
- BMB 209 - Fundamentals of Chemistry Laboratory **Credits:** 1
or
- CHY 121 - General Chemistry I **Credits:** 3
and
- CHY 123 - General Chemistry Laboratory I **Credits:** 1
- FSN 101 - Introduction to Food and Nutrition **Credits:** 3
- KPE 250 - Prevention and Care for Sports Injuries **Credits:** 3
- Elective Credits: 6

Second Year - Second Semester

- KPE 304 - Assessment Technology and Data Management for Physical & Health Education and Exercise Prescription **Credits: 3**
- KPE 270 - Motor Development and Learning **Credits: 3**
- KPE 376 - Kinesiology **Credits: 3**
- KPE 378 - Physiology of Exercise **Credits: 3**
- Lab Science Credits: 4

Third Year - First Semester

- KPE 425 - Health Promotion and Disease Prevention **Credits: 3**
- KPE 426 - Exercise Prescription and Leadership **Credits: 3**
- PHY 111 - General Physics I **Credits: 4**
- General Education Course Credits: 3
- Lab Science Credits: 4

Third Year - Second Semester

- ENG 317 - Business and Technical Writing **Credits: 3**
- KPE 367 - Adapted Physical Education **Credits: 3**
- KPE 490 - Nutrition for Sports and Exercise **Credits: 3**
- Lab Science Credits: 4
- Math General Education Course Credits: 3

Fourth Year - First Semester

- Elective Credits: 6
- Lab Science Credits: 4
- General Education Course Credits: 3

Fourth Year - Second Semester

- KPE 427 - Health Fitness Internship **Credits: 3-6**¹
- Electives Credits: 6-9
Notes: 1) Minimum GPA required to take KPE 427 is 2.75. Students below the minimum GPA are required to take EHD 493 for capstone.

Required Courses in Suggested Sequence for the B.S. in Kinesiology and Physical Education - Outdoor Leadership Concentration

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 253 - Lifetime Fitness for Health **Credits: 3**
- SFR 106 - Introduction to Forest Land Navigation and Technology **Credits: 2**
- Elective Credits: 3

First Year - Second Semester

- BIO 208 - Anatomy and Physiology **Credits: 4**
- KPE 262 - Methods of Teaching Physical Activity **Credits: 3**
- KPE 265 - Outdoor and Adventure Activities **Credits: 3**
- KPE 286 - Introduction to Outdoor Leadership and Facilitation **Credits: 1**
- PSY 100 - General Psychology **Credits: 3**

**Start Planning Your Semester Away

Second Year - First Semester

- FSN 101 - Introduction to Food and Nutrition **Credits: 3**
- LDR 100 - Foundations of Leadership **Credits: 3**
- SFR 220 - Environment and Society **Credits: 3**
- *MES or **WLE/SFR Credits: 3
- Gen Ed Math Credits: 3

Second Year - Second Semester

- KPE 396 - Outdoor Leadership Field Experience **Credits: 3** (Winter Term)
- KPE 270 - Motor Development and Learning **Credits: 3**
- KPE 280 - Introduction to Paddling Instruction and Safety **Credits: 3** (May Term)
- KPE 209 - Wilderness First Responder **Credits: 3**
- KPE 376 - Kinesiology **Credits: 3**
- *MES or **WLE/SFR Credits: 3
- Confirm Semester Away Plans

Footnote

* MES 101 - Introduction to Maine Studies Credits: 3 or MES 201 - The Maine Coast Credits: 3

** WLE 230 - Introduction to Wildlife Conservation Credits: 3 or SFR 107 - Forest Vegetation Credits: 3

Third Year - First Semester

- EHD 202 - Education in a Multicultural Society **Credits: 3**
- KPE 311 - Advanced Methods of Instructing Outdoor Activities **Credits: 3**
- KPE 378 - Physiology of Exercise **Credits: 3**
- LDR 300 - Advanced Leadership Theory and Practice **Credits: 3**
- SFR 228 - Forest Recreation Management **Credits: 3**

Third Year - Second Semester

- Self Directed Study Away Credits: 12-15

Fourth Year - First Semester

- ENG 317 - Business and Technical Writing **Credits: 3**
- KPE 367 - Adapted Physical Education **Credits: 3**
- KPE 411 - Ethics and Social Justice in Outdoor Leadership **Credits: 3**
- Gen Ed. Art/Creative Credits: 3
- Gen Ed. Math Credits: 3

Fourth Year - Second Semester

- KPE 427 - Health Fitness Internship **Credits: 3-6**
- Elective - 300 level or above Credits: 3
- Elective Credits: 3
- Elective Credits: 3

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: 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

This program is offered at the main campus of the University of Maine in Orono.

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 Council for the Advancement of Educator Preparation (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 6-12 classroom, a minimum of B in ENG 101, and minimum of B in 6 credits of Mathematics. If the minimum grade requirement is not met, a passing score for the state of Maine for the appropriate PRAXIS CORE subtest(s) is sufficient. **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 have an average of B or higher in 45 credits of the content specialization area OR a passing score for Maine on the corresponding Praxis 2 exam (test code 5038 English, 5235 Life Science/Biology, 5161 Mathematics, 5245/5435/5265 Physical Science, 5081 Social Studies, 5174 French, 5195 Spanish) prior to student teaching. For more information about the state required PRAXIS exam, visit the EDHD website. 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 Core (if minimum grades for ENG 101 and 6 credits of Math are not met) 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**
- 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 2.75 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**
and
- EHD 498 - Seminar for Interns **Credits: 1-3**
or
- EHD 493 - Alternative Practicum and Seminar in Education **Credits: 3 - 6 ***

*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 Core if minimum grade not met (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**
- 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 if minimum grade not met 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** (Students in this major, must take 3-6 credits)
- Concentration Requirements. Credits 6-12
Methods Courses:
English Concentration: ERL 441 and EHD 400
Social Studies Concentration: ESS 441, EHD 400
Science Concentration (Life or Physical): ESC 452, EHD 400
Math Concentration: EHD 400, EMA 405
World Language Concentration: EHD 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 45 credit hours are required (to include Secondary English Methods courses). Students must have a minimum GPA of a B in their academic specialization to graduate or have passed the appropriate Praxis subtest 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 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 235 - Literature and the Modern World **Credits: 3**
- ENG 236 - Intro to Canadian Literature **Credits: 3**
- ENG 238 - Nature and Literature **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 - Genre Seminar **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)

- ERL 472 - Language and Linguistics **Credits:** 3

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

a. Written: ENG 101 and one ENG course at the Intermediate level

b. 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, EDT 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**
(students in this major must take 3-6 credits)
Must apply the semester prior to observation. Fingerprints are required at time of application.
- ERL 441 - Methods of Teaching English in the Secondary School **Credits: 3**

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

World Languages Specialization

Students majoring 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 B in their academic specialization to graduate or have passed the appropriate Praxis subtest to graduate. In addition, all world language students are required to take ERL 472 Language and 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. Students are required to declare a second major in French or Spanish.

Specialization in French (Required Courses):

- FRE 305 - French Conversation and Composition: Social Issues **Credits: 3**
OR
- FRE 306 - French Conversation and Composition: Global Issues **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 400 - Advanced French Grammar **Credits: 3**
- ERL 472 - Language and 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**
- ERL 472 - Language and 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

- EHD 466 - The Teaching of Modern Languages **Credits: 3**
- EHD 400 - Field Observation (Activity) **Credits: 1-6**
(Students in this major must take 3-6 credits)
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 B in their academic specialization to graduate or have passed the appropriate Praxis subtest 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 - Probability Theory **Credits: 3**
- MAT 345 - 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:** 4

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

Methods Courses: Mathematics

- EHD 400 - Field Observation (Activity) **Credits:** 1-6 (Students in this major must take 3-6 credits)
Must apply the semester prior to observation. Fingerprints are required at time of application.
- EMA 405 - Mathematics for Secondary 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 B in their academic specialization to graduate or have passed the appropriate Praxis subtest 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 Evolution
- Intro to Chemistry:
CHY 121/123
CHY 122/124

- Mathematics: MAT 232, MAT 122 or MAT 126

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
(Students in this major must take 3-6 credits)
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 B in their academic specialization to graduate or have passed the appropriate Praxis subtest 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 - General Chemistry I **Credits:** 3
- CHY 122 - General Chemistry II **Credits:** 3
- CHY 123 - General Chemistry Laboratory I **Credits:** 1
- CHY 124 - General Chemistry Laboratory II **Credits:** 1

- MAT 126 - Calculus I **Credits:** 4
- MAT 127 - Calculus II **Credits:** 4
- STS 132 - 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 Earth Science **Credits:** 4
- ERS 240 - The Atmosphere **Credits:** 4
- ERS 330 - Earth Materials **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 451 - Mechanics **Credits:** 3
- Physics Elective #1
- Physics Elective #2
- Physics Elective #3

Methods Courses: Physical Sciences

- EHD 400 - Field Observation (Activity) **Credits:** 1-6 (Students in this major must take 3-6 credits) 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 B in their academic specialization to graduate or have passed the appropriate Praxis subtest 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)
- GEO 100 - World Geography **Credits: 3**
or
- HTY 265 - The Power of Maps **Credits: 3**
or
- HTY 275 - Geography of Globalization **Credits: 3**
or
- HTY 365 - The American Immigrant Experience **Credits: 3**
or
- HTY 465 - American Landscapes **Credits: 3**

- HTY 103 - Creating America to 1877 **Credits: 3**
- HTY 104 - United States History Since 1877 **Credits: 3**
- HTY 105 - History of Ancient and Medieval Europe **Credits: 3**
or
- HTY 106 - History of Modern Europe **Credits: 3**
(HTY 103-106 meets the Gen Ed requirement for Western Cultural Tradition)
- POS 100 - American Government **Credits: 3**
- SOC 101 - Introduction to Sociology **Credits: 3**
- ECO 120 - Principles of Microeconomics **Credits: 3**
or
- ECO 121 - Principles of Macroeconomics **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 12 credit hours required at the 200-level or above, choosing from any of the following areas:

- Anthropology (ANT)
- History (HTY)
- Government/Political Science (POS)
- Economics

Methods Courses: Social Studies

- EHD 400 - Field Observation (Activity) **Credits:** 1-6 (Students in this major must take 3-6 credits) 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: Janice Bacon, 118 Merrill Hall, 581-1319, janiceb@maine.edu

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.

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: 2.5

Minimum Grade requirements for courses to count toward minor: A grade of C- 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

The College of Education and Human Development offers an 18-credit minor in Education for undergraduate students 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 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 202 - Education in a Multicultural Society, EHD 203 - Educational Psychology, and an education related elective,
- A grade of C- 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.

Students Seeking Teacher Certification

Students who wish to pursue teacher certification in Maine must be enrolled in the College of Education and Human Development either through an Education Major or by completing double majors in Education and in another College. For students wishing to become certified teachers, the double major is a better option than the minor. **A minor in Education does not lead to certification.**

An alternative route to a teaching career for Liberal Arts majors is the Master of Arts in Teaching (MAT) Program that is sponsored by the College. The fifth year program is competitive and application should be made by February 1. Please contact the Advising Center if you have interest or questions about this program.

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)

- EHD 204 - Teaching and Assessing for Student Learning **Credits:** 3
- SED 302 - Adapting Instruction for Students with Disabilities **Credits:** 3
- One education related elective (see examples below)

Two Education Electives

- CHF 201 - Introduction to Child Development **Credits: 3**
- CHF 433 - Adolescence **Credits: 3**
- EDT 400 - Integrating Technology for Teaching and Learning **Credits: 3**
- PSY 224 - Psychology of Adolescence **Credits: 3**
- Any EHD class at the 101 level or higher

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: Diane LeGrande, 103 Lengyel Hall, 581-2466, legrande@maine.edu

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, BIO 208 - Anatomy and Physiology, and FSN 101 - Introduction to Food and Nutrition. 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 425 - Health Promotion and Disease Prevention **Credits: 3**
- KPE 426 - Exercise Prescription and Leadership **Credits: 3**
- KPE 490 - Nutrition for Sports and Exercise **Credits: 3**

Minor: Outdoor Leadership

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.

Other requirements: A minimum of 12 credit hours of the minor must be completed at the University of Maine or the University of Maine at Machias

Contact Information: Lauren Jacobs, 106 Lengyel Hall, 581-4930, lauren.jacobs@maine.edu

Complete the following Required Courses:

- KPE 209 - Wilderness First Responder **Credits:** 3 ^
- KPE 265 - Outdoor and Adventure Activities **Credits:** 3
- KPE 280 - Introduction to Paddling Instruction and Safety **Credits:** 3
- KPE 286 - Introduction to Outdoor Leadership and Facilitation **Credits:** 1
- KPE 311 - Advanced Methods of Instructing Outdoor Activities **Credits:** 3
- KPE 411 - Ethics and Social Justice in Outdoor Leadership **Credits:** 3

^The KPE 209 WFR course requirement will be waived if students hold a current WFR certification from a nationally-recognized wilderness medicine organization. Students with a waived KPE 209 requirement will choose from the following options to complete their 19 credits:

- PHI 232 Environmental Ethics
- Additional field experience course (either KPE 396 or KPE 450)

Plus one of the following field experience courses:

- KPE 396 - Outdoor Leadership Field Experience **Credits:** 3
- KPE 450 - Bringing the Classroom Outdoors **Credits:** 3

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: Sid Mitchell, 224 Merrill Hall, 581-3435, sid.mitchell@maine.edu

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 (<https://umaine.edu/edhd/peace-and-reconciliation-studies/minor>).

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 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 451 - Mediation: Its Premises, Practices and Policies **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: 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: Sid Mitchell, 224 Merrill Hall, 581-3435, sid.mitchell@maine.edu

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 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 451 - Mediation: Its Premises, Practices and Policies **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

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
Bachelor of University Studies, CLAS pathway
Chemistry
Communication
Computer Science
English
French
History
Human Dimensions of Climate Change
Human-Centered Technology Design
Interdisciplinary Studies in Multimodal Interaction
International Affairs
Journalism
Mathematics
Media Studies
Music
New Media
Philosophy
Physics
Political Science
Psychology
Romance Languages
Sociology
Spanish
Studio Art
Theatre
Women's, Gender, and Sexuality Studies

Bachelor of Fine Arts in:

Studio Art

Bachelor of Music in:

Music Education
Music Performance

Bachelor of Science in:

Chemistry
Computer Science
Mathematics
Physics

Minors:

Anthropology
Archaeology
Art History
Astronomy
Canadian Studies
Chemistry
Classical Studies
Computer Science
Criminal Justice
Creative Writing
Dance
English
Environmental Ethics
Ethics, and Political Philosophy
Film and Video
Folklore and Traditional Arts
Franco American Studies
French
Geography
Graphic Design
History
Human-Computer Interaction
Human Dimensions of Climate Change
International Affairs
Jazz Studies
Journalism
Judaic Studies
Leadership Studies
Legal Studies
Maine Studies
Marxist and Socialist Studies
Mathematics
Media Studies
Medieval and Renaissance Studies
Mental Health and Rehabilitation
Music
Native American Studies
New Media
Philosophy
Physics
Political Science
Political Theory
Professional Languages
Professional Skills for the Liberal Arts Major
Professional Writing
Psychology
Religious Studies
Sociology
Spanish
Statistics
Studio Art
The Constitution and American Law
Theatre
Technical Technology
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. To complete their degree, students must earn a cumulative GPA of 2.0 or better in the courses in the major field that are credited toward completion of the major in the College of Liberal Arts and Sciences. Students graduating with a minor in a CLAS field must likewise earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.
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 60 credits outside of the academic major.
2. All students pursuing a B.A. degree are subject to the following credit limitations:
 - a. 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.
 - b. 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. Students matriculating effective Fall 2011 must complete an academic minor or a second academic major.
4. 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.
5. Students in a CLAS major who complete the preparatory courses necessary to enter the 5-year MBA program (ACC 201; ACC 202; ECO 120; ECO 121; either MKT 270, MGT 325, or FIN 350; and a statistics course approved by CLAS), totaling at least 18 credit hours, will be considered to have met the minor requirement in 3A, although no minor will be listed on their transcript.

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 and Academic Services 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 and Academic Services Center:

The Advising and Academic Services Center (AASC) was established with the goal of increasing student access, connection, satisfaction, and retention in the College of Liberal Arts and Sciences. The AASC works to achieve this goal through a holistic advising approach, providing support for all students as well as directing them to additional academic resources on campus. The Explorations Program, which serves students undecided about an academic program and students who were not accepted into their first academic program of choice, is also part of the AASC. Academic Advisors and Success Instructors serve Explorations Program students during their first year at UMaine while assisting them with choosing a major and being academically successful.

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.

Matriculated CLAS students who have completed at least one semester at UMaine and have accrued 54 (or more) degree credits without declaring a major will automatically be placed into the Bachelor of University Studies, CLAS Pathway program. Students will receive notification of this change and will meet with the CLAS BUS advisor to discuss their program of study and determine if they wish to remain in the BUS pathway or declare another major for which they are eligible.

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.

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).

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 for one course at the intermediate level. Upon completion of a second course with a grade of B- or higher, a student will be awarded credit for the second semester of the intermediate course sequence.

The Modern Languages and Classics Department accepts Advanced Placement Examinations in Foreign Languages and Literature, as well as the Seal of Biliteracy, for degree credit. See the Advanced Placement Credit Table or the Seal of Biliteracy Credit Table in the Undergraduate Catalog for more information.

For further information, contact the Department of Modern Languages and Classics (207-581-2072), 5472 Williams Hall, Room 201, The University of Maine, Orono, ME 04469-5742.

Critical Languages Program:

The Department of Modern Languages and Classics offers beginning and some intermediate courses in a number of other languages in addition to French and Spanish, including American Sign Language, German, Hebrew, Latin, and Mandarin Chinese. In addition, Arabic, Irish Gaelic, Italian, Japanese, Korean, Brazilian Portuguese, Russian, Ukrainian, and Urdu classes are available through the Critical Languages Program.

The program follows a modified version of the self-instructional pedagogy advocated by NASILP (National Association of Self-Instructional Language Programs), a method loosely based on the one used by the Foreign Service Institute. It is effective because it requires active, committed learning by students through the study of appropriate materials, frequent practice, and the availability of accurate linguistic models provided by the native-speaker tutor-instructor. The program also includes three hours of drills/practice a week in small tutorials of 3 to 8 students. For more information, contact the coordinator of the Critical Languages Program at (207) 581-2093.

Dwell:

Launched in 2018, *dwell* is an undergraduate journal published and edited collaboratively by students with an interest in philosophy. It is released annually in print form.

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

Anthropology

Samuel Hanes
228 South Stevens Hall
207.581.1885
samuel.hanes@maine.edu

Art

Justin Wolff
Lord Hall
207.581.3259
justin.wolff@maine.edu

Canadian-American Center

Frédéric Rondeau, Director
207.581.4228
frederic.rondeau@maine.edu

Chemistry

Alice Bruce
271 Aubert Hall
207.581.1182
abruce@maine.edu

Communication and Journalism

Judith Rosenbaum, Chai
414 Dunn Hall
207.581.1934
judith.rosebaumandre@maine.edu

School of Computing and Information Science

Penny Rheingans
348A Boardman Hall
207.581.2188
penny.rheingans@maine.edu

English

Steven Evans
304A Neville Hall
207.581.3822
english.chair@maine.edu

Franco-American Studies

Susan Pinette, Director
207.581.3791
spinette@maine.edu

History

Stephen Miller
255 Stevens Hall
207.581.1905
stephen.miller@maine.edu

International Affairs

Kristin Vekasi
Director, School of Policy & International Affairs
207.581.1871
kristin.vekasi@maine.edu

Judaic Studies

Derek Michaud
The Maples
207.581.3890
derek.a.michaud@maine.edu

Maine Studies/Maine Folklife Center

Stephen Miller
112B South Stevens Hall
207.581.1840
folklife@maine.edu

Mathematics and Statistics

Nigel Pitt
333 Neville Hall
207.581.3901
nigel.pitt@maine.edu

McGillicuddy Humanities Center

Beth Wiemann, Director
110 South Stevens Hall
207.581.1848
mhc@maine.edu

Modern Languages and Classics

Carlos Villacorta Gonzales
214 Williams Hall
207.581.2095
carlos.villacorta@maine.edu

Native American Studies

Darren Ranco, Chair of Native American Programs
207.581.9485
darren.ranco@maine.edu

New Media

Penny Rheingans
348A Boardman Hall
207.581.2188
penny.rheingans@maine.edu

Philosophy

Kirsten Jacobson
The Maples

207.581.3848
Kirsten.jacobson@maine.edu

Physics and Astronomy

John Thompson
223 Bennett Hall
207.581.1016
umphysicschair@maine.edu

Political Science

Mark Brewer
113A Boudreau Hall
207.581-1863
mark.brewer@maine.edu

Psychology

Michael Robbins, Interim Chair
301A Williams Hall
207.581.2030
umainepsych@maine.edu

Religious Studies

Derek Michaud
The Maples
207.581.3890
derek.a.michaud@maine.edu

School of Performing Arts

Philip Edelman
207.581.1257
philip.edelman@maine.edu

School of Policy and International Affairs

James Settele
Director, School of Policy & International Affairs
207.581.1835
spia@maine.edu

Sociology

Karyn Sporer
Fernald Hall
207.581.2380
sociology@maine.edu

VEMI Lab

Richard Corey, Director
Carnegie Hall
207.581.2151
richard.r.corey@maine.edu

Women's, Gender and Sexuality Studies

Elizabeth Neiman
Director of the Women's, Gender, and Sexuality Studies Program
207.581.3439
elizabeth.neiman@maine.edu

Major

Anthropology

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to graduate: 120

Minimum Cumulative GPA required to graduate: 2.0

Minimum number of credits required to complete the major: 36 credits in ANT or GEO courses

Minimum Grade requirements for courses to count toward major: A grade of C- or higher is required for ANT 101, 102, 317, 400. A grade of C or higher is required for ANT 493.

Other GPA requirements to graduate: A minimum cumulative GPA of 2.0 in the major.

Required Course(s) for fulfilling Capstone Experience: ANT 493. Alternatively, with approval, students may fulfill the capstone requirement with ANT 460, ANT 497 or the Honors thesis (HON 499). Double majors: If ANT is your secondary major, the capstone from your primary major may fulfill your ANT capstone requirement as long as there is an anthropological component to it (chair approval required). However, the earned credits of your primary capstone experience/course will not count toward the minimum number of credits required for the ANT major.

Courses satisfying the writing intensive requirement within the major: ANT 400, ANT 448, ANT 464, ANT 466, ANT 476 and ANT 493

Residency Requirement: ANT 317, ANT 400, and ANT 493 and 9 other credits, must be taken at UMaine

Contact Information: Samuel Hanes, Chair, Associate Professor of Anthropology, 5773 S. Stevens Hall, (207) 581-1885, Fax: (207) 581-1823, samuel.hanes@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.

For more information about our undergraduate and graduate programs, program learning outcomes, internships, special resources and programs, and research and career opportunities, see our web site at <https://umaine.edu/anthropology/>.

Information about the Anthropology major

- A minimum of 36 ANT or GEO credits is required. In some cases, double majors may be able to apply up to six credits of related coursework (subject to approval) from the second major toward the 36 credits required for the Anthropology major.
- 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.
- ANT 317 and ANT 400 are both major requirements and should be taken as early as possible. ANT 400 is the writing intensive course within the major and is limited to 15 majors of junior or senior standing.
- 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, 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.

- 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 to develop training within specific areas of interest (e.g., archaeology, biological anthropology, environmental anthropology, geography)
- Although not required, the Anthropology Department strongly encourages a study abroad experience through International Programs or Travel Study. Students should work with the advisor and department chair in advance to ensure proper course selection toward the degree program.

Specifically required courses for the BA in Anthropology:

- ANT 101 - Introduction to Anthropology: Human Origins and Prehistory **Credits: 3**
- ANT 102 - Introduction to Anthropology: Diversity of Cultures **Credits: 3**
- ANT 317 - Fundamentals of Archaeology **Credits: 3**
- ANT 400 - Basic Theory in Cultural Anthropology **Credits: 3**
- ANT 493 - Anthropology Senior Seminar & Capstone Research Project **Credits: 3**

First Year - First Semester

- ANT 101 - Introduction to Anthropology: Human Origins and Prehistory **Credits: 3**
- Elective course in ANT/GEO Credits: 3
- Gen Ed and/or minor/double major coursework Credits: 9

First Year - Second Semester

- ANT 102 - Introduction to Anthropology: Diversity of Cultures **Credits: 3**
- Elective course in ANT/GEO Credits: 3
- Gen Ed and/or minor/double major coursework Credits: 9

Second Year -First Semester

- Elective course in ANT/GEO Credits: 3
- Gen Ed and/or minor/double major coursework Credits: 12

Second Year -Second Semester

- ANT 317 - Fundamentals of Archaeology **Credits: 3**
- Elective course in ANT/GEO Credits: 3
- Gen Ed and/or minor/double major coursework Credits: 9

Third Year - First Semester

- ANT 400 - Basic Theory in Cultural Anthropology **Credits: 3**
- Elective Course in ANT/GEO Credits: 3
- Gen Ed and/or minor/double major coursework Credits: 9

Third Year - Second Semester

- Study abroad or UMaine major/minor/second major coursework Credits: 15

Fourth Year - First Semester

- Elective course in ANT/GEO Credits: 3
- Minor/double major coursework Credits: 12

Fourth Year - Second Semester

- ANT 493 - Anthropology Senior Seminar & Capstone Research Project **Credits: 3**
- Elective course in ANT/GEO Credits: 3
- Gen Ed and/or minor/double major coursework Credits: 9

Art 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 grade of C or higher is required in each course required for the major.

Other GPA requirements to graduate: A minimum cumulative GPA of 2.0 in the major.

Required Course(s) for fulfilling Capstone Experience: 12 credits of EHD 494 or 3-6 credits of Alternative Capstone

Courses satisfying the writing intensive requirement within the major: AED 372

Residency requirement: Majors in the College of Liberal Arts & Sciences require a minimum of 15 institutional credits in the major.

Contact Information: Justin Wolff, Professor & Chair, Department of Art, 107 Lord Hall, (207) 581-3245, justin.wolff@maine.edu

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 NASAD-accredited 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 15 credits in Art Education, 40 credits of art studio (34 in required courses, 6 in studio electives); 18 credits of art history. In addition, students are required to complete 15-24 credits of professional education coursework, including the capstone experience. In order to complete the 120 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 that 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 Interdisciplinary Disability Studies Minor in affiliation with the Behavioral and Developmental Pediatrics Center at Eastern Maine Medical Center and its cooperating agencies. (See the University Wide Academic Programs 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.

Information about the Art Education major

Required Courses in Art Education (15 Credits)

- 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**
- AED 473 - Advanced Curriculum in Art Education **Credits: 3**
- AED 474 - SL: Topics in Art Education **Credits: 3**

Required Courses in Education (24 Credits)

- PSY 100 - General Psychology **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**
- EHD 494 - Student Teaching K-12 (Art or Music) **Credits: 1 - 12**
or
- AED 497 - Independent Study in Art Education **Credits: 1**
or
- AED 498 - Directed Study in Art Education **Credits: Ar (Capstone)**

Courses in Studio Art (39-40 Credits)

Recommended Course: ART 104 - Successful Strategies for Visual Arts Majors Credit: 1

Required Courses:

- 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**
- ART 220 - Sculpture I **Credits: 3**
- ART 225 - Ceramics I **Credits: 3**
- ART 230 - Painting I **Credits: 3**
- ART 240 - Printmaking I **Credits: 3**
- ART 270 - Digital Art I **Credits: 3**
- ART 3-4XX (in 3d area)
- ART 3-4XX (in 2d area)

Elective Courses:

- ART 1-4XX
- ART 3-4XX

Required Courses in History of Art Courses (18 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 - Pre 1750
- ARH 2XX - Post 1750
- ARH 3-4XX - Post 1750 or Non-Western
- ARH 3-4XX - Pre 1750 or Non-Western

Suggested four-year plan for the BA in Art Education

First Year (30-32 Credits)

- ART 100 - Drawing I **Credits: 3**
- ART 104 - Successful Strategies for Visual Arts Majors **Credits: 1**
- ART 110 - 2-D Design **Credits: 3**
- ART 120 - 3-D Design **Credits: 3**
- ART 200 - Drawing II **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**
- ENG 100 - College Composition Stretch, Part I **Credits: 3**
- PSY 100 - General Psychology **Credits: 3**
- General Education Requirement (Suggested, lab science and General Education #5)
- General Education Requirement (MAT 107 or MAT 108 recommended)

Second Year (30 Credits)

- ART 2XX
- ART 2XX
- ART 2XX
- ART 2XX
- ART 2XX
- ART 2XX
- ART 2XX
- AED 372 - Foundations of Art Education **Credits: 3**
- EHD 202 - Education in a Multicultural Society **Credits: 3**
- EHD 203 - Educational Psychology **Credits: 3**
- General Education Requirement (MAT 107 or 108 recommended)

Third Year (30 Credits)

- AED 371 - Methods and Materials in Art Education **Credits: 3**
- AED 373 - Introduction to Curriculum **Credits: 3**
- AED 473 - Advanced Curriculum in Art Education **Credits: 3**
- AED 474 - SL: Topics in Art Education **Credits: 3**
- ART 2XX
- ART 2XX
- ARH 3-4XX
- ARH 3-4XX
- SED 302 - Adapting Instruction for Students with Disabilities **Credits: 3**
- General Education Requirement

Fourth Year (30 Credits)

- ART 3-4XX
- ART 3-4XX
- ARH 3-4XX
- General Education (non lab science)
- General Education (#3 and Ethics)
- Capstone Requirement:
- EHD 494 - Student Teaching K-12 (Art or Music) **Credits:** 1 - 12
or
Alternative Capstone Requirement (3-6 Credits):
- AED 497 - Independent Study in Art Education **Credits:** 1
or
- AED 498 - Directed Study in Art Education **Credits:** Ar

Art History

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to graduate: 120

Minimum Cumulative GPA required to graduate: 2.0

Minimum number of credits required to complete the major: 51 (39 credits in Art History, 6 credits in Studio Art, and 6 credits in Modern Languages)

Minimum Grade requirements for courses to count toward major: A C- or higher is required in all major (ARH) courses.

Other GPA requirements to graduate: Cumulative GPA of 2.0 or better in the courses in the major field that are credited toward the major.

Required Course(s) for fulfilling Capstone Experience: ARH 499 or HON 498/499 (Art History Thesis)

Courses satisfying the writing intensive requirement within the major: ARH 369, ARH 451, ARH 452, ARH 460, ARH 461, ARH 466, ARH 492, ARH 493, ARH 494, and ARH 495

Residency requirement: Majors in the College of Liberal Arts & Sciences require a minimum of 15 institutional credits in the major.

Contact Information: Justin Wolff, Professor & Chair, Department of Art, 107 Lord Hall, (207) 581-3245, justin.wolff@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 & Sciences (CLAS) should make sure to review those requirements as stated on the College of Liberal Arts & Sciences page of the catalog.

For more information about our undergraduate and graduate programs, program learning outcomes, internships, special resources and programs, and research and career opportunities, see our web site at <https://umaine.edu/art/>.

Information about the Art History Major

Required Core Courses in Art History - 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 451 - Art Theory and Criticism **Credits:** 3
- ARH 452 - Critical Methods in History of Art **Credits:** 3
- ARH 499 - Capstone Experience in History of Art **Credits:** 3

Elective Courses in Art History - 24 Credits

ARH 25X Pre-1750 - 6 Credits

- 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**
- *Note: ARH 270, depending on the topic, may also meet this elective requirement

ARH 26X Post-1750 - 6 Credits

- ARH 261 - Nineteenth-Century European Art **Credits: 3**
- 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 264 - Themes and Issues in Contemporary Art **Credits: 3**
- ARH 265 - American Art **Credits: 3**
- *Note: ARH 270, depending on the topic, may also meet this elective requirement

ARH 4XX Pre-1750 - 3 Credits

- ARH 492 - Baroque Research Seminar **Credits: 3**
- ARH 493 - Medieval Research Seminar **Credits: 3**
- ARH 494 - Renaissance Research Seminar **Credits: 3**
- *Note: ARH 460 depending on the topic, may also meet this elective requirement

ARH 3XX-4XX Post-1750 - 3 Credits

- ARH 369 - Film and Video Theory Seminar **Credits: 3**
- ARH 461 - Nineteenth-Century Art Research Seminar **Credits: 3**
- ARH 466 - Twentieth Century Art and Architecture Seminar **Credits: 3**
- ARH 495 - Modern/Post-Modern Seminar **Credits: 3**
- *Note: ARH 460, depending on the topic, may also meet this elective requirement

ARH 300 -400 Level 6 Credits

- Any 300- or 400- level seminar
- *Note: Some 3XX and 4XX ARH courses may be repeated for credit

Required Studio Art and Language Courses - 12 Credits

ART 1XX - 6 Credits

- ART 100 - Drawing I **Credits: 3**
- ART 110 - 2-D Design **Credits: 3**
- ART 120 - 3-D Design **Credits: 3**

MLC Foreign Language - 6 Credits

- *Note: Two 3-credit courses in the same language; course prefixes are different for each language

Suggested four-year plan for the BA 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
- Other Credits: 3 (e.g. minor, second major, or honors requirements)

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
- Other Credits: 3 (e.g. minor, second major, or honors requirements)

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
- Other Credits: 3 (e.g. minor, second major, or honors requirements)

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
- Other Credits: 3 (e.g. minor, second major, or honors requirements)

Third Year - Second Semester

- ARH 300 or 400 Level Seminar Credits: 6
- Other Credits: 3 (e.g. minor, second major, or honors requirements)

Fourth Year - First Semester

- ARH 452 - Critical Methods in History of Art **Credits: 3**

- ARH 300 or 400 Level Seminar Credits: 3
- Other Credits: 3 (e.g. minor, second major, or honors requirements)

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
- Other Credits: 3 (e.g. minor, second major, or honors requirements)

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: A minimum cumulative GPA of 2.0 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 who have earned significant University of Maine credits but have no cohesive body of coursework in a major currently offered by the University of Maine.

Admission:

Matriculated University of Maine students who apply to the Bachelor of University Studies (B.U.S.) CLAS Pathway program *must* a minimum of 42 credit hours completed. At least 24 credit hours must have been earned at the University of Maine. The remaining hours may have been earned at UMaine or through acceptable transfer from regionally accredited post-secondary institutions. 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.

Matriculated CLAS students who have accumulated 54 (or more) degree credits, but who have not declared a major will automatically be placed into the BUS program. Students will receive notification of this change and will meet with the BUS advisor to discuss their program of study and determine if they wish to remain in the BUS pathway or declare another major. Students should look at degree requirements for other colleges to determine their qualifications for another program outside of CLAS.

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 15 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.

Learning Outcomes:

- Students demonstrate an ability to reflect on prior knowledge and learning experiences
- Students demonstrate an ability to integrate and apply their reflections toward developing goals and objectives for their future.
- Students demonstrate an ability to identify their skills, employment interests, and career directions.
- Students demonstrate skills in critical thinking, professional writing, and research, as related to their career interests.

Chemistry

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to graduate: 120

Minimum number of credits required to complete the major: BS 49; BS (ACS Certified) 58; BA 43

Minimum Cumulative GPA required to graduate: 2.0

Minimum Grade requirements for courses to count toward major: A C or higher is required in any course used toward the Chemistry major. A one-time exception may be made for a passing grade of C- or below as long as the overall GPA is met.

Other GPA requirements to graduate: Cumulative GPA of 2.0 or better in the courses in the major field that are credited toward the major.

Required Course(s) for fulfilling Capstone Experience: BS(ACS Certified): CHY 498 and CHY 499; BS: CHY 492 and CHY 498; BA: CHY 492 and one upper-level chemistry elective; or HON 498/499 on a topic in chemistry and advised by an appropriate faculty member will be accepted as a capstone experience for all students in Chemistry (BA, BS or BS ACS Certified). The thesis proposal form must be signed by the chair of the Department of Chemistry.

Courses satisfying the writing intensive requirement within the major: CHY 393 and CHY 491

Residency Requirement: 15 credits of upper-level Chemistry courses.

Recommended courses: Double Math major should take MAT 259 and 262 in lieu of MAT 258

Contact Information: Alice Bruce, Chair, 154 Aubert Hall, 581-1168, abruce@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.

For more information about our undergraduate and graduate programs, program learning outcomes, internships, special resources and programs, and career opportunities, see our web site at <https://umaine.edu/chemistry/>.

Information about the Chemistry major.

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.

B.S. Degree in Chemistry (49 credits)

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, or careers 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 49 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 - General Chemistry I **Credits:** 3
- CHY 122 - General Chemistry II **Credits:** 3
- CHY 123 - General Chemistry Laboratory I **Credits:** 1

- CHY 124 - General Chemistry Laboratory II **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 261 - Introduction to Inorganic Chemistry **Credits:** 3
- CHY 298 - Introduction to Chemistry Research and the Chemistry Profession **Credits:** 1
- CHY 393 - Undergraduate Seminar in Chemistry **Credits:** 3
- CHY 471 - Physical Chemistry I **Credits:** 3
- CHY 491 - Advanced Integrated Laboratory I **Credits:** 3
- CHY 492 - Advanced Integrated Laboratory II **Credits:** 3
- CHY 498 - Undergraduate Research **Credits:** 1-3

Plus a choice of at least two of the following:

- CHY 423 - Introductory Polymer Chemistry **Credits:** 3
- CHY 431 - Structure and Mechanism in Biological Chemistry **Credits:** 3
- CHY 443 - Instrumental Analysis **Credits:** 3
- CHY 461 - Advanced Inorganic Chemistry I **Credits:** 3
- 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
- CHY 499 - Undergraduate Thesis **Credits:** 3

Additional Requirements:

- MAT 126 - Calculus I **Credits:** 4
- MAT 127 - Calculus II **Credits:** 4
- PHY 111 - General Physics I **Credits:** 4
or
- PHY 112 - General Physics II **Credits:** 4
and
- PHY 121 - Physics for Engineers and Physical Scientists I **Credits:** 4
or
- PHY 122 - Physics for Engineers and Physical Scientists II **Credits:** 4
- Students interested in pursuing a double Math major should take MAT 259 and 262 in lieu of MAT 258; this is also recommended for a math minor.
- General education courses and electives must be chosen to satisfy the university-wide requirements for the BS degree.

Capstone (6 credits total):

- CHY 492 - Advanced Integrated Laboratory II **Credits:** 3
- CHY 498 - Undergraduate Research **Credits:** 1-3

Suggested four-year plan for B.S. Degree in Chemistry

First Year - First Semester (15 Credits)

- CHY 105 - Majoring in Chemistry **Credits: 1**
- CHY 121 - General Chemistry I **Credits: 3**
- CHY 123 - General Chemistry Laboratory I **Credits: 1**
- ENG 101 - College Composition **Credits: 3**
- MAT 126 - Calculus I **Credits: 4**
- Elective - Credits: 3

First Year - Second Semester (15 Credits)

- CHY 122 - General Chemistry II **Credits: 3**
- CHY 124 - General Chemistry Laboratory II **Credits: 1**
- MAT 127 - Calculus II **Credits: 4**
- * PHY 121 - Physics for Engineers and Physical Scientists I **Credits: 4**
- Elective - Credits: 3

Second Year - First Semester (15 Credits)

- CHY 251 - Organic Chemistry I **Credits: 3**
- CHY 253 - Organic Chemistry Laboratory I **Credits: 2**
- PHY 122 - Physics for Engineers and Physical Scientists II **Credits: 4**
- Electives - Credits: 6

Second Year - Second Semester (15 Credits)

- CHY 252 - Organic Chemistry II **Credits: 3**
- CHY 254 - Organic Chemistry Laboratory II **Credits: 2**
- CHY 261 - Introduction to Inorganic Chemistry **Credits: 3**
- CHY 298 - Introduction to Chemistry Research and the Chemistry Profession **Credits: 1**
- Electives - Credits : 6

Third Year - First Semester (14 Credits)

- CHY 242 - Principles of Quantitative Analysis and Solution Equilibria **Credits: 5**
- CHY 393 - Undergraduate Seminar in Chemistry **Credits: 3**
- CHY 471 - Physical Chemistry I **Credits: 3**
- Elective - Credits: 3

Third Year - Second Semester (16 Credits)

- CHY 491 - Advanced Integrated Laboratory I **Credits: 3**
- CHY 498 - Undergraduate Research **Credits: 1-3**
- Electives - Credits: 12

Fourth Year - First Semester (16 credits)

- CHY 492 - Advanced Integrated Laboratory II **Credits: 3**
- CHY 498 - Undergraduate Research **Credits: 1-3**
- CHY 4XX Elective - Credits: 3
- Electives - Credits: 8

Fourth Year - Second Semester (15 credits)

- CHY 4XX Elective - Credit: 3
- Electives - Credits: 12

Note:

This is a sample curriculum only. Some courses may be taken at alternate times in the program without disrupting the overall schedule. Students should consult with a Chemistry advisor to determine which courses can be moved if necessary.

*Previous Chemistry students strongly recommend taking PHY 121 in the spring of the first year.

**If you are interested in a minor in math, you should take MAT 259 and MAT 262 instead of MAT 258.

B.S. with ACS certification (58 credits)

The American Chemical Society certified B.S. degree in chemistry prepares the student for graduate study or for an employment career in the chemical industry or a wide array of fields that require knowledge of chemistry. Students must take a minimum of 58 credits of course work in chemistry. The following courses are required for the ACS certified BS degree:

- CHY 105 - Majoring in Chemistry **Credits: 1**
- CHY 121 - General Chemistry I **Credits: 3**
- CHY 122 - General Chemistry II **Credits: 3**
- CHY 124 - General Chemistry Laboratory II **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 261 - Introduction to Inorganic Chemistry **Credits: 3**
- CHY 298 - Introduction to Chemistry Research and the Chemistry Profession **Credits: 1**
- CHY 393 - Undergraduate Seminar in Chemistry **Credits: 3**
- CHY 431 - Structure and Mechanism in Biological Chemistry **Credits: 3**

- CHY 471 - Physical Chemistry I **Credits:** 3
- CHY 472 - Physical Chemistry II **Credits:** 3
- or
- CHY 475 - Physical Chemistry III **Credits:** 3
- CHY 491 - Advanced Integrated Laboratory I **Credits:** 3
- CHY 492 - Advanced Integrated Laboratory II **Credits:** 3
- CHY 498 - Undergraduate Research **Credits:** 1-3 (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 461 - Advanced Inorganic Chemistry I **Credits:** 3
- 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

Additional Requirements:

- 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 111 - General Physics I **Credits:** 4
 - or
 - PHY 112 - General Physics II **Credits:** 4
 - and
 - PHY 121 - Physics for Engineers and Physical Scientists I **Credits:** 4
 - or
 - PHY 122 - Physics for Engineers and Physical Scientists II **Credits:** 4
 - Students interested in pursuing a Math minor should take MAT 259 and 262 in lieu of MAT 258.
 - General education courses and electives must be chosen to satisfy the university-wide requirements for the BS degree.
- Capstone Experience (6 credits total)
- CHY 498 - Undergraduate Research **Credits:** 1-3
 - CHY 499 - Undergraduate Thesis **Credits:** 3

Suggested four-year plan for ACS-Certified B.S. Degree

First Year - First Semester (15 Credits)

- CHY 105 - Majoring in Chemistry **Credits:** 1
- CHY 121 - General Chemistry I **Credits:** 3
- CHY 123 - General Chemistry Laboratory I **Credits:** 1

- ENG 101 - College Composition **Credits: 3**
- MAT 126 - Calculus I **Credits: 4**
- Elective - Credits: 3

First Year - First Semester (15 Credits)

- CHY 122 - General Chemistry II **Credits: 3**
- CHY 124 - General Chemistry Laboratory II **Credits: 1**
- MAT 127 - Calculus II **Credits: 4**
- * PHY 121 - Physics for Engineers and Physical Scientists I **Credits: 4**
- Elective - Credits: 3

Second Year - First Semester (16 Credits)

- CHY 251 - Organic Chemistry I **Credits: 3**
- CHY 253 - Organic Chemistry Laboratory I **Credits: 2**
- MAT 228 - Calculus III **Credits: 4**
- PHY 122 - Physics for Engineers and Physical Scientists II **Credits: 4**
- Elective - Credits: 3

Second Year - Second Semester (16 Credits)

- CHY 252 - Organic Chemistry II **Credits: 3**
- CHY 254 - Organic Chemistry Laboratory II **Credits: 2**
- CHY 261 - Introduction to Inorganic Chemistry **Credits: 3**
- CHY 298 - Introduction to Chemistry Research and the Chemistry Profession **Credits: 1**
- ** MAT 258 - Introduction to Differential Equations with Linear Algebra **Credits: 4**
- Elective - Credits: 3

Third Year - First Semester (14 Credits)

- CHY 242 - Principles of Quantitative Analysis and Solution Equilibria **Credits: 5**
- CHY 393 - Undergraduate Seminar in Chemistry **Credits: 3**
- CHY 471 - Physical Chemistry I **Credits: 3**
- Elective - Credits: 3

Third Year - Second Semester (16 Credits)

- CHY 431 - Structure and Mechanism in Biological Chemistry **Credits: 3**
- CHY 491 - Advanced Integrated Laboratory I **Credits: 3**
- CHY 498 - Undergraduate Research **Credits: 1-3**
- Electives - Credits: 6

Fourth Year - First Semester (14 credits)

- CHY 492 - Advanced Integrated Laboratory II **Credits: 3**
- CHY 498 - Undergraduate Research **Credits: 1-3**
- CHY 4XX Elective - Credits: 3
- Electives - Credits: 6

Fourth Year - Second Semester (15 credits)

- CHY 472 - Physical Chemistry II **Credits: 3**
or
- CHY 475 - Physical Chemistry III **Credits: 3**
- CHY 499 - Undergraduate Thesis **Credits: 3**
- CHY 4XX Elective - Credits: 3
- Electives - Credits: 6

Note:

This is a sample curriculum only. Some courses may be taken at alternate times in the program without disrupting the overall schedule. Students should consult with a Chemistry advisor to determine which courses can be moved if necessary.

*Previous Chemistry students strongly recommend taking PHY 121 in the spring of the first year.

** If you are interested in a minor in math, you may take MAT 259 and MAT 262 instead of MAT 258.

B.A. Degree in Chemistry (43 credits)

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 43 credits of course work in chemistry. The following courses are required for the BA degree:

- CHY 105 - Majoring in Chemistry **Credits: 1**
- CHY 121 - General Chemistry I **Credits: 3**
- CHY 122 - General Chemistry II **Credits: 3**
- CHY 123 - General Chemistry Laboratory I **Credits: 1**
- CHY 124 - General Chemistry Laboratory II **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 261 - Introduction to Inorganic Chemistry **Credits: 3**
- CHY 298 - Introduction to Chemistry Research and the Chemistry Profession **Credits: 1**
- CHY 393 - Undergraduate Seminar in Chemistry **Credits: 3**
- CHY 471 - Physical Chemistry I **Credits: 3**
- CHY 491 - Advanced Integrated Laboratory I **Credits: 3**
- CHY 492 - Advanced Integrated Laboratory II **Credits: 3**

Plus a choice of at least one of the following:

- CHY 423 - Introductory Polymer Chemistry **Credits:** 3
- CHY 431 - Structure and Mechanism in Biological Chemistry **Credits:** 3
- CHY 443 - Instrumental Analysis **Credits:** 3
- CHY 461 - Advanced Inorganic Chemistry I **Credits:** 3
- 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
- CHY 498 - Undergraduate Research **Credits:** 1-3 (must take a minimum of 3 credits total over at least 2 semesters)

Additional Requirements:

- MAT 126 - Calculus I **Credits:** 4
- MAT 127 - Calculus II **Credits:** 4
- PHY 111 - General Physics I **Credits:** 4
or
- PHY 112 - General Physics II **Credits:** 4
and
- PHY 121 - Physics for Engineers and Physical Scientists I **Credits:** 4
or
- PHY 122 - Physics for Engineers and Physical Scientists II **Credits:** 4
- 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 or a double major in another discipline.

Capstone Experience (6 credits total)

- CHY 492 - Advanced Integrated Laboratory II **Credits:** 3
- and one upper level chemistry elective (CHY 4xx)

Suggested four-year plan for B.A. Degree in Chemistry

First Year - First Semester (15 Credits)

- CHY 105 - Majoring in Chemistry **Credits:** 1
- CHY 121 - General Chemistry I **Credits:** 3
- CHY 123 - General Chemistry Laboratory I **Credits:** 1
- ENG 101 - College Composition **Credits:** 3
- MAT 126 - Calculus I **Credits:** 4
- Elective - Credits: 3

First Year - Second Semester (15 Credits)

- CHY 122 - General Chemistry II **Credits:** 3
- CHY 124 - General Chemistry Laboratory II **Credits:** 1

- MAT 127 - Calculus II **Credits: 4**
- * PHY 121 - Physics for Engineers and Physical Scientists I **Credits: 4**
- Elective - Credits: 3

Second Year - First Semester (15 Credits)

- CHY 251 - Organic Chemistry I **Credits: 3**
- CHY 253 - Organic Chemistry Laboratory I **Credits: 2**
- PHY 122 - Physics for Engineers and Physical Scientists II **Credits: 4**
- Electives - Credits: 6

Second Year - Second Semester (15 Credits)

- CHY 252 - Organic Chemistry II **Credits: 3**
- CHY 254 - Organic Chemistry Laboratory II **Credits: 2**
- CHY 261 - Introduction to Inorganic Chemistry **Credits: 3**
- CHY 298 - Introduction to Chemistry Research and the Chemistry Profession **Credits: 1**
- Electives - Credits: 6

Third Year - First Semester (15 Credits)

- CHY 242 - Principles of Quantitative Analysis and Solution Equilibria **Credits: 5**
- CHY 393 - Undergraduate Seminar in Chemistry **Credits: 3**
- CHY 471 - Physical Chemistry I **Credits: 3**
- Elective - Credits: 4

Third Year - Second Semester (15 Credits)

- CHY 491 - Advanced Integrated Laboratory I **Credits: 3**
- Electives - Credits: 12

Fourth Year - First Semester (15 credits)

- CHY 492 - Advanced Integrated Laboratory II **Credits: 3**
- Electives - Credits: 12

Fourth Year - Second Semester (15 credits)

- CHY 4XX Elective - Credits: 3
- Electives - Credits: 12

Note:

This is a sample curriculum only. Some courses may be taken at alternate times in the program without disrupting the overall schedule. Students should consult with a Chemistry advisor to determine which courses can be moved if necessary.

*Previous Chemistry students strongly recommend taking PHY 121 in the spring of the first year.

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 350, 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**
- CMJ 103 - Public Speaking **Credits: 3**
- ENG 315 - Research Writing in the Disciplines **Credits: 3**

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 132 - 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.

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 number 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.

Communication

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to graduate: 120

Minimum number of credits required to complete the major: 30

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: Cumulative GPA of 2.0 or better in the courses in the major field that are credited toward the major.

Required Course(s) for fulfilling Capstone Experience: CMJ 485

Residency Requirement: 24 credits of CMJ coursework at the University of Maine.

Contact Information: Judith Rosenbaum-Andre, Chair, 414 Dunn Hall, judith.rosenbaumandre@maine.edu

For a complete description of our undergraduate and graduate programs, program learning outcomes, internships, special resources and programs, and career opportunities, see our web site at <https://cmj.umaine.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.

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 201, ENG 205, ENG 206, ENG 301, ENG 315, ENG 317, ENG 415. CMJ 136 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.

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 - Rhetorical Theory **Credits:** 3
- CMJ 202 - Communication Theory **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 may count toward the major.

No more than 1 of CMJ 102/103/106/107

- CMJ 102 - Fundamentals of Interpersonal Communication **Credits: 3**
- CMJ 103 - Public Speaking **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 - SL: Small Group Communication **Credits: 3**
- CMJ 347 - Argument and Critical Thinking **Credits: 3**
- CMJ 367 - Public Relations **Credits: 3**
- CMJ 370 - Visual Communication **Credits: 3**
- CMJ 401 - Speech, Space, Event: Critical Applications **Credits: 3**
- CMJ 402 - Communication Research **Credits: 3**
- CMJ 403 - Persuasion and Social Influence **Credits: 3**
- CMJ 404 - Risk Communication **Credits: 3**
- CMJ 405 - Gender in Communication **Credits: 3**
- CMJ 407 - SL -Environmental Communication **Credits: 3**
- CMJ 420 - SL: Health Communication **Credits: 3**
- CMJ 425 - SL: Health Campaigns **Credits: 3**
- CMJ 450 - Communication and Technology **Credits: 3**
- CMJ 466 - SL: Narrative, Performance, and Social Change **Credits: 3**
- CMJ 493 - Advanced Topics in Communication **Credits: 3**
- CMJ 495 - Internship **Credits: 1-3**

Additional credits:

Students MAY take additional credits in department courses beyond the 30 required for the major, but must take at least **60** credit hours outside of CMJ courses.

Suggested four-year plan for the B.A. in Communication

First Year - First Semester

- CMJ 102 - Fundamentals of Interpersonal Communication **Credits: 3**
or
- CMJ 103 - Public Speaking **Credits: 3**
or
- CMJ 106 - Storytelling **Credits: 3**
or
- CMJ 107 - Communication and the Environment **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 - Rhetorical Theory **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 Theory **Credits: 3**
- General Education Science or Mathematics/Statistics Credits: 3
- CMJ External Requirement Credits: 9

Second Year - Second Semester

- CMJ 2xx or 3xx Major Course 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 Major 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 3xx or 4xx Major Course 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 3xx or 4xx Major Course Requirement Credits: 6
- CMJ External Requirement Credits: 9

Fourth Year - Second Semester

- CMJ 485 - Capstone Seminar in Communication **Credits: 3**
- CMJ 3xx or 4xx Major Course Requirement Credits: 3
- ****Electives Credits: 9**

****Elective Credits**

Elective Credits may be used to meet remaining General Education, college, B.A., or department requirements.

Students may also take additional credits in department courses beyond the 30 required for the major, but must take at least 60 credit hours outside of CMJ courses.

Computer Science

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to graduate: 120

Minimum Cumulative GPA required to graduate: 2.0

Minimum number of credits required to complete the major: BS: 88; BA: 71

Minimum Grade requirements for courses to count toward major: C or better in COS 125, COS 140, COS 225, MAT 126, and ENG 101.

Other GPA requirements to graduate: Cumulative GPA of 2.0 in all COS courses credited toward the major.

Required Course(s) for fulfilling Capstone Experience: either the two-course sequence of COS 397 and COS 497 or the CIS Research Capstone sequence of COS 501, INT 601, COS 503, COS 504, followed by COS 498 (2 credit hours).

Courses satisfying the writing intensive requirement within the major: COS 397 and COS 497 or COS 490

Residency requirement: Majors in the College of Liberal Arts & Sciences require a minimum of 15 institutional credits in the major.

Contact Information: School of Computing and Information Science, Undergraduate Coordinators Christopher Dufour, 134 Boardman Hall, christopher.dufour@maine.edu and Roy Turner, 240 Boardman Hall, rturner@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.

For more information about our undergraduate and graduate programs, program learning outcomes, internships, special resources and programs, and research and career opportunities, see our web site at <https://umaine.edu/cs/>.

Information about the Computer Science major

The School of Computing and Information Science (SCIS) offers two degrees for our majors. The B.S. degree provides a comprehensive foundation in computer science and prepares the student for a rewarding career in industry, business, government, or anywhere else that computing knowledge and skill is needed. It also provides solid foundation for graduate work in computer science and computing-related fields. The B.S. degree is accredited by the Computing Accreditation Commission of ABET. The B.A. degree gives the student a strong foundation in computer science while providing more flexibility for coursework outside the major. Like the B.S., it also prepares the student for a rewarding career in computing or for graduate work. Note that the B.S. does not require a minor, but the B.A. does.

Bachelor of Science Degree in Computer Science

Computer Science Courses - 53 credit hours

- COS 100 - Success in Computer Science **Credits:** 1
- * COS 125 - Introduction to Problem Solving Using Computer Programming **Credits:** 4
- COS 135 - Applied C Programming **Credits:** 3

- * COS 140 - Foundations of Computer Science **Credits: 3**
- * COS 225 - Object-Oriented Design, Programming and Data Structures **Credits: 3**
- COS 226 - Introduction to Data Structures and Algorithms **Credits: 3**
- COS 235 - Computer Architecture **Credits: 3**
- COS 301 - Programming Languages **Credits: 3**
- COS 331 - Operating Systems **Credits: 3**
- COS 420 - Introduction to Software Engineering **Credits: 3**
- COS 430 - Introduction to Cybersecurity **Credits: 3**
- COS 490 - Computers, Ethics and Society **Credits: 3**
- Twelve additional credit hours from courses COS 3XX, COS 4XX and COS 5XX or approved substitutes
- A capstone experience either:
 - COS 397 Computer Science Capstone 1 Credits: 3
 - COS 497 Computer Science Capstone 2 Credits: 3
- or the CIS Research Capstone sequence
 - COS 501 - Introduction to CIS Research Credits: 1
 - INT 601 - Responsible Conduct of Research Credits: 1
 - COS 503 - Professional Research Communication 1 Credits: 1
 - COS 504 - Professional Research Communication 2 Credits: 1
 - followed by COS 498 - Topics in Computer Science Credits: 2

Mathematics Courses - 15-16 credit hours

- * MAT 126 - Calculus I **Credits: 4**
- MAT 127 - Calculus II **Credits: 4**
- COS 250 - Discrete Structures **Credits: 4**
Statistics: one of these (3-4 cr)
- STS 235 - Introduction to Statistical Methods **Credits: 3**
or
- STS 332 - Statistics for Engineers **Credits: 3**
or
- STS 435 - Introduction to Mathematical Statistics **Credits: 3**

Capstone Experience:

To meet the capstone requirement for the B.S., students must use their accumulated knowledge of the field in addressing a particular problem. Students may meet the capstone requirement through completing COS 397 and COS 497. Alternately, students may meet the capstone requirement through completing the CIS Research Capstone sequence of COS 501, INT 601, COS 503, COS 504, followed by COS 498 - Topics in Computer Science (2 credit hours).

English - 6 credit hours

- * ENG 101 - College Composition **Credits: 3**
- ENG 317 - Business and Technical Writing **Credits: 3**

Science - 14 credit hours

This must include a two-semester laboratory science sequence from either BIO 100/200 or BIO 100/208 or CHY 121/123 and CHY 122/124, ERS 101/102 or PHY 121/122 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 280 and above)
- Chemistry (CHY; CHY 121 and above)
- Earth Sciences (ERS)
- Marine Science (SMS)
- Physics (PHY; PHY 111 and above)**
- Wildlife Ecology (WLE; WLE 200 and above)

*A student must complete these courses with a grade of C or higher in each.

**A student cannot count both PHY 111/112 and PHY 121/122

Model Curricula for the B.S. in Computer Science

We provide here two model curricula, one for students who are calculus-ready and one for students who are not. Calculus-readiness is assessed by the student having achieved a grade of C or better in MAT 122 Pre-Calculus; or no grade record in MAT 122 and a passing score on Part 3 of the Math Placement Exam (a score of 76 or higher on the ALEK exam) to allow you to enter MAT 126 or higher. If you are calculus-ready, Model A is the model curriculum that applies to you; if not, then see Model B.

Most students will not follow the model curriculum exactly. Electives may be moved around and some adjustments might need to be made based on credit hours of courses taken (e.g., if you take a 4 credit statistics course instead of a 3 credit course). Please be aware: (1) that certain students on financial aid must take a minimum of 15 credits per semester; (2) that sufficient hours must be included to reach the University degree minimum of 120; and (3) all School, College, and University requirements must be met. You should discuss your planned schedule and progress with your assigned academic advisor during registration times each semester.

The term "General education" below should be interpreted to mean a course helping to satisfy the Human Values and Social Context portion of the General Education requirements. The other portions are satisfied by our own requirements for the degree.

NOTE: All courses required by the Computer Science Program must be taken for a grade; courses taken pass/fail will not count. (An exception to this policy may be in effect due to the COVID-19 pandemic; see umaine.edu/return for further information.) Courses marked with an asterisk (*) below must be completed with a grade of "C" or better in each. A grade of C- is insufficient.

Model A: Suggested four-year plan for the B.S. students taking Calculus I or higher in their first semester)

First Year - First Semester (15 Credits)

- COS 100 - Success in Computer Science **Credits: 1**
- * COS 125 - Introduction to Problem Solving Using Computer Programming **Credits: 4**
- * COS 140 - Foundations of Computer Science **Credits: 3**
- * ENG 101 - College Composition **Credits: 3**
- * MAT 126 - Calculus I **Credits: 4**

First Year - Second Semester (16 Credits)

- COS 135 - Applied C Programming **Credits: 3**
- * COS 225 - Object-Oriented Design, Programming and Data Structures **Credits: 3**
- * ENG 101 - College Composition **Credits: 3**
or
- General Education Credits: 3
- MAT 127 - Calculus II **Credits: 4**
- General Education Requirement Credits: 3

Second Year - First Semester (16 Credits)

- COS 226 - Introduction to Data Structures and Algorithms **Credits: 3**
- COS 250 - Discrete Structures **Credits: 4**
- Science Credits: 3
- General Education Credits: 3
- Elective Credits: 3

Second Year - Second Semester (15 Credits)

- COS 235 - Computer Architecture **Credits: 3**
- COS 420 - Introduction to Software Engineering **Credits: 3**
- Statistics (STS 235, 332, or 435) Credits: 3
- Science Credits: 3
- General Education Requirement Credits: 3

Three Year - First Semester (16 Credits)

- COS 331 - Operating Systems **Credits: 3**
- ENG 317 - Business and Technical Writing **Credits: 3**
- COS Elective Credits: 3
- Lab Science Credits: 4
- General Education Credits: 3

Third Year - Second Semester (16 Credits)

- COS 301 - Programming Languages **Credits: 3**
- COS 430 - Introduction to Cybersecurity **Credits: 3**
- COS Elective Credits: 3
- Lab Science Credits: 4
- General Education Credits: 3

Fourth Year - First Semester (15 Credits)

- COS 397 - Computer Science Capstone 1 **Credits: 3**
- COS 490 - Computers, Ethics and Society **Credits: 3**

- COS Elective Credits: 3
- Elective Credits: 3
- Elective Credits: 3

Fourth Year - Second Semester (12 Credits)

- COS 497 - Computer Science Capstone 2 **Credits: 3**
- COS Elective Credits: 3
- Elective Credits: 3
- Elective Credits: 3

Model B: Suggested four-year plan for the B.S. students NOT taking Calculus I or higher in their first semester

First Year - First Semester (14 Credits)

- COS 100 - Success in Computer Science **Credits: 1**
- COS 121 - Coding for Everyone **Credits: 3**
- * COS 140 - Foundations of Computer Science **Credits: 3**
- * ENG 101 - College Composition **Credits: 3**
- or
- General Education Credits: 3
- MAT 122 - Pre-Calculus **Credits: 4**

First Year - Second Semester (17 Credits)

- COS 125 - Introduction to Problem Solving Using Computer Programming **Credits: 4**
- COS 135 - Applied C Programming **Credits: 3**
- ENG 101 - College Composition **Credits: 3**
- or
- General Education Credits: 3
- MAT 126 - Calculus I **Credits: 4**
- General Education Credits: 3

Second Year - First Semester (17 Credits)

- * COS 225 - Object-Oriented Design, Programming and Data Structures **Credits: 3**
- COS 250 - Discrete Structures **Credits: 4**
- MAT 127 - Calculus II **Credits: 4**
- General Education Credits: 3
- General Education Credits: 3

Second Year - Second Semester (16 Credits)

- COS 226 - Introduction to Data Structures and Algorithms **Credits: 3**

- COS 235 - Computer Architecture **Credits: 3**
- Statistics (STS 235, 332, or 435) Credits: 3
- Science Credits: 3
- General Education Requirement Credits: 3

Third Year- First Semester (16 Credits)

- COS 331 - Operating Systems **Credits: 3**
- ENG 317 - Business and Technical Writing **Credits: 3**
- COS Elective Credits: 3
- General Education Credits: 3
- Lab Science Credits: 4

Third Year - Second Semester (16 Credits)

- COS 301 - Programming Languages **Credits: 3**
- COS 420 - Introduction to Software Engineering **Credits: 3**
- COS Elective Credits: 3
- Lab Science II Credits: 4
- General Education Credits: 3

Fourth Year - First Semester (15 Credits)

- COS 397 - Computer Science Capstone 1 **Credits: 3**
- COS 490 - Computers, Ethics and Society **Credits: 3**
- COS Elective Credits: 3
- Science Credits: 3
- General Education Credits: 3

Fourth Year - Second Semester (15 Credits)

- COS 430 - Introduction to Cybersecurity **Credits: 3**
- COS 497 - Computer Science Capstone 2 **Credits: 3**
- COS Elective Credits: 3
- Elective Credits: 3
- General Education Credits: 3

Bachelor of Arts Degree in Computer Science

Computer Science Courses - 50 credit hours

- COS 100 - Success in Computer Science **Credits: 1**
- * COS 125 - Introduction to Problem Solving Using Computer Programming **Credits: 4**
- COS 135 - Applied C Programming **Credits: 3**
- * COS 140 - Foundations of Computer Science **Credits: 3**

- * COS 225 - Object-Oriented Design, Programming and Data Structures **Credits: 3**
- COS 226 - Introduction to Data Structures and Algorithms **Credits: 3**
- COS 235 - Computer Architecture **Credits: 3**
- COS 301 - Programming Languages **Credits: 3**
- COS 331 - Operating Systems **Credits: 3**
- COS 420 - Introduction to Software Engineering **Credits: 3**
- COS 430 - Introduction to Cybersecurity **Credits: 3**
- COS 490 - Computers, Ethics and Society **Credits: 3**
- Nine additional credit hours from courses COS 3XX, COS 4XX and COS 5XX or approved substitutes
- A capstone experience either:
 - COS 397 Computer Science Capstone 1 Credits: 3
 - COS 497 Computer Science Capstone 2 Credits: 3
- or the CIS Research Capstone sequence
 - COS 501 - Introduction to CIS Research Credits: 1
 - INT 601 - Responsible Conduct of Research Credits: 1
 - COS 503 - Professional Research Communication 1 Credits: 1
 - COS 504 - Professional Research Communication 2 Credits: 1
 - followed by COS 498 - Topics in Computer Science Credits: 2

Mathematics Courses - 15-16 hours

- * MAT 126 - Calculus I **Credits: 4**
 - MAT 127 - Calculus II **Credits: 4**
 - COS 250 - Discrete Structures **Credits: 4**
- Statistics: one of these:
- STS 235 - Introduction to Statistical Methods **Credits: 3**
 - **or**
 - STS 332 - Statistics for Engineers **Credits: 3**
 - **or**
 - STS 435 - Introduction to Mathematical Statistics **Credits: 3**

Capstone Experience:

To meet the capstone requirement for the B.A., students must use their accumulated knowledge of the field in addressing a particular problem. Students may meet the capstone requirement through completing COS 397 and COS 497. Alternately, students may meet the capstone requirement through completing the CIS Research Capstone sequence of COS 501, INT 601, COS 503, COS 504, followed by COS 498 - Topics in Computer Science (2 credit hours).

English - 6 credit hours

- * ENG 101 - College Composition **Credits: 3**
- ENG 317 - Business and Technical Writing **Credits: 3**

*A student must complete these courses with a grade of "C" or better in each. A grade of "C-" is not sufficient.

Minor

Students must complete an approved minor in some department outside of Computer Science.

Model Curricula: See umaine.edu/cis.

Undergraduate Research Opportunities

The School of Computing and Information Science has many research laboratories focusing on such areas as artificial intelligence, computer vision, software engineering and privacy, computer science education, data science, high-performance computing, database systems, data visualization, spatial informatics, and new media. 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 industry and business, 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. 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, and a 4+1 (B.S. + M.S.) in Computer Science. Please see the graduate catalog and umaine.edu/cis page for more information.

4+1 BS/MS Degree Program in Computer Science

SCIS, in conjunction with the University of Maine Graduate School, offers the opportunity for Computer Science majors to begin taking graduate courses during their senior year, double-counting up to 9 credits toward the BS and the MS. Enterprising students will then be able to get a non-thesis MS by staying one extra year during which they will complete the remaining 21 credits required by the MS.

English

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to graduate: 120

Minimum Cumulative GPA required to graduate: 2.0

Minimum number of credits required to complete the major: 39

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: Cumulative GPA of 2.0 or better in the courses in the major field that are credited toward the major

Required Course(s) for fulfilling Capstone Experience: ENG 499 when taken with a variety of 400 level courses. ENG 490 and ENG 496 can only serve as capstone courses when they are accompanied by ENG 499. HON 498 and HON 499. Successful completion of ENG 395 followed by at least one semester of tutoring in the Writing Center.

Courses satisfying the writing intensive requirement within the major: ENG 301, ENG 307, ENG 309, ENG 309, ENG 315, ENG 317, ENG 395, ENG 402, ENG 405, ENG 415, ENG 416, ENG 418, ENG 440, ENG 445, ENG 459, ENG 460, ENG 470, ENG 471 and ENG 490

Residency Requirement: At least 18 credits in the major must be taken at UMaine

Contact Information: Steven Evans, Associate Professor, Department Chair, Department of English, 304 Neville Hall, 207.581.3822, steven.evans@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.

For more information about our undergraduate and graduate programs, program learning outcomes, internships, special resources and programs, and career opportunities, see our web site at <https://english.umaine.edu>

Information about the English Major

Core Requirements for All Majors:

Majors take a minimum of 39 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 215 - Theories and Practices of Writing **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, with two of these courses being at the 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

Writing Requirement for All Majors

Majors are required to complete a minimum of three writing courses (9 credits) above the level of ENG 101. Two of those courses must be at the 300 or 400 level.

These three courses can be chosen from the analytical writing, creative writing, and/or professional and technical writing options listed under "Writing Concentration Options" below. Concentrations are strongly encouraged but not required for graduation.

200 level writing courses include: ENG 201, ENG 205, ENG 206

300 and 400 level writing courses include: ENG 301 ENG 307 ENG 308 ENG 309 ENG 315 ENG 317 ENG 395 ENG 402 ENG 407 ENG 408 ENG 415 ENG 416

Writing Concentration Options

Writing Concentrations offer students a structured progression through the fields of 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. 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 201 - Strategies for Writing Across Contexts **Credits: 3**
or

- ENG 206 - Descriptive and Narrative Writing **Credits: 3**
or

- ENG 315 - Research Writing in the Disciplines **Credits: 3**
Two of the following:

- ENG 301 - Seminar in Writing Studies **Credits: 3**

- ENG 309 - Writing Creative Nonfiction **Credits: 3**

- ENG 395 - Writing Center 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 - English Career Internship **Credits: 3**

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:

Any ENG 400 level literature course in which the student writes a substantial research paper; ENG 490 is optimized for the Capstone experience but all 400 level literature courses can fulfill the requirement by arrangement with the instructor.

- ENG 395 - Writing Center 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 - English Career Internship **Credits: 3**

(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 four-year plan for the BA 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 201 - Strategies for Writing Across Contexts **Credits: 3**
or
- ENG 205 - An Introduction to Creative Writing **Credits: 3**
or
- ENG 206 - Descriptive and Narrative Writing **Credits: 3**
or
- ENG 222 - Reading Poems **Credits: 3**
- ENG 215 - Theories and Practices of Writing **Credits: 3**
- Credits toward Additional Field Requirement, BA Requirement, General Education Requirements and electives
Credits: 4-6

Second Year - Second Semester

- ENG 201 - Strategies for Writing Across Contexts **Credits: 3**
or
- ENG 205 - An Introduction to Creative Writing **Credits: 3**
or
- ENG 206 - Descriptive and Narrative 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.

French

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to graduate: 120

Minimum Cumulative GPA required to graduate: 2.0

Minimum number of credits required to complete the major: 36

Minimum Grade requirements for courses to count toward major: None

Other GPA requirements to graduate: Cumulative GPA of 2.0 or better in the courses in the major field that are credited toward the major.

Required Course(s) for fulfilling Capstone Experience: FRE 495, HON 498/499

Courses satisfying the writing intensive requirement within the major: FRE 305, FRE 306, FRE 401 and FRE 413

Residency requirement: Majors in the College of Liberal Arts & Sciences require a minimum of 15 institutional credits in the major.

Contact Information: Carlos Villacorta, Department Chair, Associate Professor of Spanish, 201 Williams Hall, (207) 581-2072, carlos.villacorta@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.

For more information about our undergraduate and graduate programs, program learning outcomes, internships, special resources and programs, and research and career opportunities, see our web site at <https://umaine.edu/mlandc/undergraduate-programs/bachelor-of-arts-programs/bachelor-of-arts-in-french/>.

Information about the French major

- 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
- Demonstration of comprehensive coverage of literature and civilization through successful completion of appropriate course work, and
- A minimum of 36 credit hours, 30 of which must be beyond the intermediate level (300 or higher) and MLC 210.

9 credit hours above intermediate level must include:

- FRE 305 - French Conversation and Composition: Social Issues **Credits:** 3
or
- FRE 306 - French Conversation and Composition: Global Issues **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

At least 18 hours of 400-level French courses, which must include:

- FRE 400 Advanced French Grammar Credits: 3
- Two courses in literature from the following course list:
 - FRE400: Advanced French Grammar
 - FRE401: Translation and Comparative Stylistics
 - FRE407: 19th Century French Literature
 - FRE408: Twentieth Century French Literature
 - FRE413: Advanced Composition and Stylistics
 - FRE430: French Film Survey
 - FRE442: French Language of North America
 - FRE463: Québec Poetry
 - FRE464: Québec Theatre
 - FRE465: The North American French Novel
 - FRE490: Advanced Topics in French
 - FRE495: Senior Project in French / Capstone
 - FRE498: Independent Projects II
- 3 Credits from French, French-Canadian, or Franco-American Civilization courses:
 - FRE430: French Film Survey
 - FRE442: French Language of North America

Special Requirements:

- FRE 495 - Senior Project in French **Credits:** 0-3 (not required of students for whom French is a secondary major)
(This satisfies a General Education requirement)
- MLC 210 - Introduction to Modern Languages **Credits:** 3

Strongly Recommended:

- History of a Francophone Country. Credits: 3
- Full-year or semester-abroad program

Suggested four-year plan for the B.A. in French 36 credits (30 above intermediate level)

First Year - First Semester (15-16 credits)

- ENG 101 - College Composition **Credits:** 3
 - FRE 201 - Intermediate French I **Credits:** 3 - 4 **
 - Human Values/Social Context Gen Ed
 - Quantitative Literacy or Science Gen Ed
 - Elective
- **or accelerated language classes at elementary and intermediate levels

First Year - Second Semester (15-16 credits)

- FRE 202 - Intermediate French II **Credits:** 3 - 4 *

- HTY 105 - History of Ancient and Medieval Europe **Credits: 3**
or
 - HTY 106 - History of Modern Europe **Credits: 3**
 - Science Gen Ed
 - Ethics Gen Ed
- *All French and Spanish courses satisfy the Cultural Diversity & International Perspectives Gen Ed requirement

Second Year - First Semester (15 credits)

- FRE 305 - French Conversation and Composition: Social Issues **Credits: 3**
(WI in the major)
- FRE 309 - Readings in French Literature **Credits: 3**
or
- FRE 310 - Readings in Francophone Literature **Credits: 3**
- Course in the chosen minor
- MAT Quantitative Literacy Gen Ed
- Elective

Second Year - Second Semester (16 credits)

- FRE 306 - French Conversation and Composition: Global Issues **Credits: 3**
(WI in the major)
- MLC 210 - Introduction to Modern Languages **Credits: 3**
- Course in chosen minor
- Human Values and Social Context Gen Ed
- Science Gen Ed

Third Year - First Semester (15 credits)

- Course in minor
- 1-2 FRE 4XX Advanced Literature/Film (Cult Div/Intn'l Perspect Gen Ed) (required for the major)
- Population and Environment Gen Ed
- Elective
- Elective

Third Year - Second Semester (12-15 credits)

- Semester Abroad (Immersion) (Highly recommended but not required for the major)
or
- 1-2 FRE 4XX Advanced courses (Cult Div/Intn'l Perspect Gen Ed) (required for the major)
- Art and Creative Exp Gen Ed
- Course in chosen minor
- Elective

Fourth Year - First Semester (15 credits)

- EHD 466 - The Teaching of Modern Languages **Credits:** 3 (for preservice teachers)
or
- Elective
- FRE 495 - Senior Project in French **Credits:** 0-3
- FRE 4XX Advanced Lit/Film/Other
- Course in chosen minor
- Remaining Gen Ed

Fourth Year -Second Semester (15 credits)

- EHD 491 - Full-Day Student Teaching (Secondary) **Credits:** 1 - 12 (preservice teachers)
or
- Elective
- FRE 495 - Senior Project in French **Credits:** 0-3
- FRE 4XX Advanced Literature/Film/Other
- Course in chosen minor
- Remaining Gen Ed

History

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to graduate: 120

Minimum Cumulative GPA required to graduate: 2.0

Minimum number of credits required to complete the major: 36

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: Cumulative GPA of 2.0 or better in the courses in the major field that are credited toward the major.

Required Course(s) for fulfilling Capstone Experience: HTY 498

Courses satisfying the writing intensive requirement within the major: HTY 311, HTY 365, HTY 405, HTY 461, and HTY 498

Department Residency Requirement: At least 18 credits must be earned from the History Department at the University of Maine

Contact Information: Stephen M. Miller, Chair, Department of History, 255 Stevens Hall, 581-1923 or Wendy Morrill, Administrative Assistant II, Department of History, 255 Stevens, 581-1908

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.

For more information about our undergraduate and graduate programs, program learning outcomes, internships, special resources and programs, and research and career opportunities, see our web site at <https://umaine.edu/history/>.

Information about the History major

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. Complete a minimum of twelve three-credit history courses, with a grade of "C" or better including:
 1. Six intermediate/advanced level courses. (All 3XX or higher courses and no more than two 200 level courses).
 2. HTY 311, normally taken during the student's junior year.
 3. At least four additional courses at any level to make up the minimum of 12. First and second year students are required to take 130.
 4. HTY 498, normally taken during the students final undergraduate year.

Suggested four-year plan for the B.A. in History

First Year - First Semester

- ENG 101 - College Composition **Credits:** 3
- HTY 130 - Craft of Historical Detection **Credits:** 3
- Electives/General Education Requirements Credits: 9

First Year - Second Semester

- HTY 1XX Introductory Elective Credits: 3
- Electives/General Education Requirements Credits: 12

Second Year - First Semester

- HTY 1XX or 2XX Introductory Elective Credits: 3
- HTY 3XX or 4XX Advanced Elective Credits: 3
- Electives/General Education Requirements Credits: 6
- Course toward fulfillment of Minor Credits: 3

Second Year - Second Semester

- HTY 1XX or 2XX Introductory Elective Credits: 3
- HTY 3XX or 4XX Advanced Elective Credits: 3
- Electives/General Education Requirements Credits: 6
- Course toward fulfillment of Minor Credits: 3

Third Year - First Semester

- HTY 311 - Research Seminar **Credits: 3**
- HTY 3XX or 4XX Advanced Elective Credits: 3
- Electives/General Education Requirements Credits: 6
- Course toward fulfillment of Minor Credits: 3

Third Year - Second Semester

- HTY 3XX or 4XX Advanced Elective Credits: 6
- Electives/General Education Requirements Credits: 6
- Course toward fulfillment of Minor Credits: 3

Fourth Year - First Semester

- HTY 3XX or 4XX Advanced Elective Credits: 3
- Electives Credits: 9
- Course toward fulfillment of Minor Credits: 3

Fourth Year - Second Semester

- HTY 498 - Senior Seminar in History **Credits: 3**
- Electives Credits: 9
- Course toward fulfillment of Minor Credits: 3

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 number of credits required to complete the major: 45

Minimum Grade requirements for courses to count toward major: ANT 101, ANT 102, ANT 225, and ANT 410 must be completed with minimum grade of C- or better. Capstone experience (ANT 493 or ANT 497) must be completed with a minimum grade of C or better.

Other GPA requirements to graduate: Cumulative GPA of 2.0 or better in the courses in the major field that are credited toward the major.

Required Courses for fulfilling Capstone Experience: ANT 493. Alternatively, with approval, students may fulfill the capstone requirement with ANT 460, ANT497 or the Honors thesis (HON 499). Double majors: If HDCC is your secondary major, the capstone from your primary major may fulfill your HDCC capstone requirement as long as there is an HDCC component to it (chair approval required). However, the earned credits of your primary capstone experience/course will not count toward the minimum number of credits required for the HDCC major.

Courses satisfying the writing intensive requirement within the major: ANT 464, ANT 466, ANT 476 and ANT 493

Residency requirement: ANT 225, ANT 410, and ANT 493 (the capstone experience), and 15 other degree program credits must be taken at UMaine

Contact Information: Samuel Hanes, Chair, Associate Professor of Anthropology, 5773 S. Stevens Hall, (207) 581-1885, Fax: (207) 581-1823, samuel.hanes@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.

For more information about our undergraduate and graduate programs, program learning outcomes, internships, special resources and programs, and research and career opportunities, see our web site at <https://umaine.edu/anthropology>.

Information about the Human Dimensions of Climate Change major

- 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 as capstone) must be completed with a minimum grade of C or better.
- 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.
- 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 and subject to approval), taken in the junior or senior year.
- 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, and achieve relevant foreign language competency at the intermediate level.
- Minors in the social or environmental sciences are appropriate for this major (e.g., climate sciences, earth sciences, marine sciences, ecology and environmental science, economics, sustainable agriculture).
- Although not required, the Anthropology Department strongly encourages a study abroad experience through International Programs or Travel Study. Students should work with the advisor and department chair in advance to ensure proper course selection toward the degree program.

Required Courses

A minimum of 42 credits is required. ANT 101, 102, and 225 must be completed with a minimum grade of C- or better and ANT 410 or ANT 497 must be completed with a minimum grade of C or better.

Core Courses (12 credits)

- 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 410 - Human Dimensions of Climate Change **Credits: 3**

Plus four electives, three of which must be ANT/GEO designator (12 credits):

- 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 350 - Mediterranean Ancient Landscapes Modern World **Credits: 3**
- ANT 464 - Ecological Anthropology **Credits: 3**
- ANT 466 - Economic Anthropology **Credits: 3**
- ANT 476 - The Ancient Maya **Credits: 3**
- ANT 497 - Department Projects **Credits: Ar** (prior approval required)
- ECO 381 - SL: Sustainability Science, Policy, and Action **Credits: 3**
- PHI 232 - Environmental Ethics **Credits: 3**

Physical Science Courses(12 credits)

Required Physical Science Courses

- BIO 100 - Basic Biology **Credits: 4**
- CHY 121 - General Chemistry I **Credits: 3**
- CHY 123 - General Chemistry Laboratory I **Credits: 1**
- PHY 111 - General Physics I **Credits: 4**

Choose one of the following tracks:

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 323 - Extreme Weather **Credits: 3**
- ERS 425 - How to Build a Habitable Planet **Credits: 3**

OPTION B, MARINE SCIENCE TRACK

Required Courses

- SMS 100 - Introduction to Ocean Science **Credits: 3**

plus one of the following

- SMS 230 - Introduction to Marine Policy and Fisheries Management **Credits: 3**

OPTION C, ECOLOGY AND ENVIRONMENTAL SCIENCE TRACK

Required courses

- EES 100 - Human Population and the Global Environment **Credits: 3**

plus one of the following

- EES 324 - Environmental Protection Law and Policy **Credits: 3**
- EES 351 - Energy, Wealth, and Power: a Biophysical Systems view of Nature and Society **Credits: 3**

OPTION D, SUSTAINABLE AGRICULTURE TRACK

- PSE 105 - Principles of Sustainable Agriculture **Credits: 3**

plus one of the following

- PSE 312 - Sustainable Food Systems: Challenges and Opportunities **Credits: 3**
- PSE 360 - Agroecology and Sustainable Cropping Systems **Credits: 4**

Capstone Experience (3 credits)

Choose one of the following courses, with minimum grade of C

- ANT 493 - Anthropology Senior Seminar & Capstone Research Project **Credits:** 3
- ANT 497 - Department Projects **Credits:** Ar

Suggested four-year plan for the BA in Human Dimensions of Climate Change

First Year - First Semester

- ANT 101 - Introduction to Anthropology: Human Origins and Prehistory **Credits:** 3
- ANT 225 - Climate Change, Societies and Cultures **Credits:** 3
- BIO 100 - Basic Biology **Credits:** 4
- Gen Ed. and/or minor/double major coursework Credits: 5

First Year - Second Semester

- ANT 102 - Introduction to Anthropology: Diversity of Cultures **Credits:** 3
- CHY 121 - General Chemistry I **Credits:** 3
- CHY 123 - General Chemistry Laboratory I **Credits:** 1
- Elective course in HDCC ANT/GEO Credits: 3
- Gen Ed and/or minor/double major coursework Credits: 5

Second Year -First Semester

- PHY 111 - General Physics I **Credits:** 4
- Elective course in HDCC ANT/GEO Credits: 3
- Gen Ed and/or minor/double major coursework Credits: 8

Second Year -Second Semester

- ERS 121 - Humans and Global Change **Credits:** 3
or
- SMS 100 - Introduction to Ocean Science **Credits:** 3
- Elective course in HDCC ANT/GEO Credits: 3
- Gen Ed and/or minor/double major coursework Credits: 9

Third Year - First Semester

- Elective course in HDCC ANT/GEO Credits: 3
- Earth Science or Marine Science track course Credits: 3-4
- Gen Ed and/or minor/double major coursework Credits: 8-9

Third Year - Second Semester

- Study abroad or UMaine major/minor/second major coursework Credits: 15

Fourth Year - First Semester

- Gen Ed/major/minor/double major coursework Credits: 15

Fourth Year - Second Semester

- ANT 410 - Human Dimensions of Climate Change **Credits: 3**
- Minor/double major coursework Credits: 9

Human-Centered Technology Design

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: C

Other GPA requirements to graduate: Cumulative GPA of 2.0 in all HCD courses credited toward the major

Required Course(s) for fulfilling Capstone Experience: HCD 498, HCD 499

Contact Information: Nimesha Ranasinghe, r.ranasinghe@maine.edu, 207-581-2195

Human-Centered Technology Design is an approach to problem solving that puts humans (users) at the center of the design process. The process starts with building deep empathy for those being designed for, and is used to design both physical and digital products. After completing the program, students will have a thorough understanding of how to execute HCTD activities and methods and will have first experience to plan HCTD in a realistic environment. To be able to work in multidisciplinary teams, students are introduced to related topics in various fields, including psychology, computing and information technology, and entrepreneurship. The structure of the curriculum begins with courses with a view to specialization in later terms. Introductory courses provide an overview of human-centered design, followed by in-depth examinations of HCTD activities in the areas of prototyping, user research, usability evaluation, and usability engineering.

Students are introduced to fundamental theories and concepts of human-centered design, including interface design and evaluation, usability and universal design, multimodal interfaces (touch, gesture, natural language), virtual reality, and spatial displays. Exploring and refining desired behaviors and user experience, students learn methods, concepts, and techniques necessary to make human-centered design an integral part of developing effective interactions. User experience and interaction design, grounded in psychology, help students recognize the centrality of people's needs, and the context of use, frames product opportunities, so that they can skillfully propose useful, usable, and desirable (usually digital) solutions. Such knowledge and skills prepare students for work in active areas of research and development, including bio-inspired design using the human system as a model for good design and for exploring the role of collaborative intelligence in design, smart and connected systems for supporting human interactions and engagement.

The structure of the HCTD program provides consistent support for student success through repeated, progressive research and creative opportunities where students discover or invent effective paths to resolving artistic or analytical challenges that may be complicated by a competitive environment, opposing interests, and divergent or uncertain data and information. As a result, students come to understand not only the technological transformations impacting interaction and communication, but also the technological, social and political changes that underlie the movement toward a digital society, informed by historical and critical perspectives.

The proposed Human-Centered Technology Design program is based on a review of dozens of well-established creative technology and game design programs and a separate review of as many undergraduate educational institutions deploying experiential learning throughout their curricula, integrating problem-based learning (PBL) at institutional, college, program and course levels.

- Students begin the HCTD program with classes that provide hands-on experiences in several areas of HCTD, promoting a DIY-DIWO culture. Experiential learning throughout the curriculum focuses on the open-ended exploration on the expressive and inventive potentials of various emerging technology areas. All coursework supports a 'maker' culture and collaboration, working with interdisciplinary groups, cultivating appreciation and practical skills in project-development and management. Throughout the curriculum, students would stay engaged by working on projects connected to real-world challenges. These progressive undergraduate research opportunities culminate in either laboratory and/or co-op learning on real-world projects with collaborative partners through programs including the VEMI Lab, Maine Geospatial Institute, Multisensory Interactive Media Lab, and ASAP Media Service, or through off-campus industry opportunities.
- The core curriculum is designed to cover a plethora of basic required skills, including problem-solving, computational thinking, wireframing, rapid prototyping, and communication skills. In addition, students have flexibility to specialize

in their identified pathway. These core skills will be essential to prepare students for real world problem solving and work in multidisciplinary teams in the future.

- HCTD students take the introductory Innovation Engineering course through the Foster Center for Innovation, where they begin developing an entrepreneurial mindset and learning the tools that are essential to realizing true and sustainable positive change.
- The academic culture of HCTD must be collaborative, with classes being offered in dedicated spaces emphasizing cooperative exploration. Students have the flexibility to choose projects that align with their interests; faculty would act as coaches, mentors and advisers, providing responsive, contextually informed instruction and helping student teams find the resources they need.
- Students may co-op at on-campus facilities or with companies throughout Maine, working on multi-semester projects in teams or cohorts on real-world research and development with UM research faculty, for the campus, community organizations or industrial partners.

Our Project-Based Learning method further uses a tiered method of mentoring, where advanced-level undergraduates mentor early-year participants and graduate students mentor advanced-level undergraduates. Faculty facilitates mentoring throughout the project continuum. This Vertically Integrated Project (VIP) model is a natural fit for the HCTD program at UM.

Required Courses

HCD Courses (12 credits)

- HCD 101 Explorations in Human Centered Design Credits: 3
- HCD 218 - Introduction to User Centered Design Credits: 3
- HCD 251 - Interactive Systems Design and Development Credits: 3
- HCD 318 - Advanced Projects in Human Centered Design Credits: 3

Capstone (6 credits)

- HCD 498 - Capstone I Credits: 3
- HCD 499 - Capstone II Credits: 3

Optional Industry Internship

- HCD 350 - Internship

Communications (6 credits)

- CMJ 107 - Communication and the Environment **Credits: 3**
- CMJ 370 - Visual Communication **Credits: 3**

Innovation Engineering (7 credits)

- INV 121 - Fundamentals of Innovation **Credits: 3**
- INV 282 - Advanced Innovation Skills **Credits: 4**

English (3 credits)

- ENG 315 - Research Writing in the Disciplines **Credits: 3**
or
- ENG 317 - Business and Technical Writing **Credits: 3**

Psychology (11 credits)

- PSY 241 - Statistics in Psychology **Credits: 4**
- PSY 245 - Principles of Psychological Research **Credits: 4**
And one of the following:
- PSY 350 - Cognition **Credits: 3**
- PSY 361 - Sensation and Perception **Credits: 3**

Computer Science (9 credits)

- * COS 121 - Coding for Everyone **Credits: 3**
or
- * COS 135 - Applied C Programming **Credits: 3**
- COS 125 - Introduction to Problem Solving Using Computer Programming **Credits: 4**
- COS 225 - Object-Oriented Design, Programming and Data Structures **Credits: 3**
*one of these is required.

HCTD-Designated Elective Courses (15 credits)

See list at bottom

Required Courses in Suggested Sequence for B.S. in Human-Centered Technology Design

First Year - First Semester (15 Credits)

- CMJ 107 - Communication and the Environment **Credits: 3**
- COS 121 - Coding for Everyone **Credits: 3**
or
- COS 135 - Applied C Programming **Credits: 3**
- HCD 101 - Explorations in Human Centered Design **Credits: 3**
- ENG 101 - College Composition **Credits: 3**
or
- General Education Course **Credits: 3**
- General Education course **Credits: 3**

First Year - Second Semester (16 credits)

- COS 125 - Introduction to Problem Solving Using Computer Programming **Credits: 4**
- INV 121 - Fundamentals of Innovation **Credits: 3**
- ENG 101 - College Composition **Credits: 3**
or

- General Education course Credits: 3
- General Education course Credits: 3
- Electives Credit: 3

Second Year - First Semester (16 credits)

- COS 225 - Object-Oriented Design, Programming and Data Structures **Credits: 3**
- HCD 251 - Interactive Systems Design Credits: 3
- PSY 241 - Statistics in Psychology **Credits: 4**
- General Education course Credits: 3
- General Education course Credits: 3

Second Year - Second Semester (17 credits)

- INV 282 - Advanced Innovation Skills **Credits: 4**
- HCD 218 - Introduction to User Centered Design Credits: 3
- PSY 245 - Principles of Psychological Research **Credits: 4**
- HCTD Elective - Credits: 3
- General Education course - Credits: 3

Third Year - First Semester (15 credits)

- CMJ 370 - Visual Communication **Credits: 3**
- ENG 315 - Research Writing in the Disciplines **Credits: 3**
- HCD 318 - Advanced Projects in Human Centered Design Credits: 3
- PSY 350 - Cognition **Credits: 3**
- HCTD Electives Credits: 3

Third Year - Second Semester (15 credits)

- PSY 361 - Sensation and Perception **Credits: 3**
- HCTD Electives Credits: 6
- Electives Credits: 6

Internship (Variable credits)

Taken between Third and Fourth years

Fourth Year - First Semester (15 credits)

- HCD 498 - Capstone I Credits: 3
- HCTD Elective Credits: 3
- Electives Credits: 9

Fourth Year - Second Semester (15 credits)

- HCD 499 Capstone II Credits: 3
- HCTD Electives Credits: 3
- Electives Credits: 9

HCTD-Designated Elective Courses

Design

- ART 250 - Graphic Design I **Credits: 3**
- ART 350 - Graphic Design II **Credits: 3**
- CMJ 202 - Communication Theory **Credits: 3**
- CMJ 347 - Argument and Critical Thinking **Credits: 3**
- NMD 342 - Interaction Design and Physical Computing **Credits: 3**
- NMD 442 - User Experience Design **Credits: 3**
- SIE 515 - Human Computer Interaction Credits: 3

Emerging Technology

- COS 312 - An Introduction to Video Game Programming with the Unity Game Engine **Credits: 3**
- COS 412 - Advanced Game Programming with Unity **Credits: 3**
- COS 417 - Spatial Interaction Design **Credits: 3**
- EET 111 - Circuit Analysis I **Credits: 4**
- EET 274 - Introduction to Microcontrollers **Credits: 4**
- NMD 342 - Interaction Design and Physical Computing **Credits: 3**
- NMD 345 - Web Applications **Credits: 3**
- NMD 445 - Mobile Applications **Credits: 3**
- SIE 516 - Interactive Technologies for Solving Real-World Problems Credits: 3

Programming

- BIS 235 - Digital Business Transformation **Credits: 3**
- COS 412 - Advanced Game Programming with Unity **Credits: 3**
- COS 420 - Introduction to Software Engineering **Credits: 3**
- COS 435 - Information Privacy Engineering **Credits: 3**
- COS 465 - Data Visualization **Credits: 3**
- NMD 105 - Creative Coding I **Credits: 3**
- NMD 211 - Creative Coding II **Credits: 3**

Entrepreneurship & Innovation

- COS 490 - Computers, Ethics and Society **Credits: 3**
- INV 471 - Special Topics in Innovation **Credits: 3**
- INV 480 - Internship in Innovation **Credits: 1-6**
- NMD 200 - Designing Humane Tech **Credits: 3**
- NMD 306 - Community Collaboration and Development **Credits: 3**

Interdisciplinary Studies in Multimodal Interaction

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to graduate: 120

Minimum Grade requirements for courses to count toward major: A grade of C- or better for any course counting toward the major. C or better in Capstone Experience courses and in Work Experience courses.

Required Course(s) for fulfilling Capstone Experience: HTI 490 (9 credits); HTI 499 (6 credits).

Courses satisfying the writing intensive requirement within the major: HTI 499

Other required course information: HTI 495 (18 CR.)

GPA requirements to graduate: 2.0.

Contact Information: Richard Corey, Director, VEMI Lab, Carnegie Hall, 207.581.2151, richard.r.corey@maine.edu

The Bachelor of Arts program in Interdisciplinary Studies allows students to integrate the problem solving and technological skills learned through hands-on research experience in the VEMI Lab with more traditional academic focus areas. The VEMI Lab coordinates the BA in Interdisciplinary Studies in Multimodal Interaction. The Lab is a multi-disciplinary environment where students learn and innovate to solve unmet challenges with technology. Students design an individualized major under the supervision of a Program Committee (see Requirements, below). The major requires a student integrate areas of interest (reflected in coursework) that, when combined with technology, creates a unique, personalized degree that meets individualized educational goals that cannot be achieved within any departmentally based major program.

Students who wish to pursue a BA in Interdisciplinary Studies in Multimodal Interaction must submit an application to the VEMI Director, in the form of video or written statement of intent and the areas of interest to the student. (See under Requirements, below.)

The unique feature of the major is its focus on working and learning in a laboratory, company or other approved facility that facilitates practical problem solving skills, hands on research experience, and direct experiential learning. Additionally, a rigorous capstone sequence of up to four semesters to prepare, execute, complete, and report results of an approved capstone project completes the integration of experiential learning and classroom study.

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.

Upon completion of the major, a student will have a broad array of practical, professional skills. Students in the major will contribute to the economic and technological development of the state.

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:

1. Students must submit a video (of no more than 3 minutes) or a written essay (of no more than 2 pages) to the Director of the VEMI Lab. Approval by the Director and the Associate Dean for Academics is required. The student may declare this major only after the proposal has been approved at the College level.
2. 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.

3. In consultation with the VEMI Lab Director, a student will compose a Program Committee of at least three faculty members, at least two of whom must be affiliated with the VEMI lab and have an appointment in the College of Liberal Arts and Sciences.
4. Completion of 33 credits as follows: HTI 495, Work Experience 18 credits; and Capstone sequence, 15 credits (HTI 490, 9 credits) and HTI 499 (6 credits).
5. Completion of at least 36 credits from at least two or three departments. If two departments, one must be in CLAS. If three departments, at least two must be in CLAS. At least 27 of these credits must be in upper-level courses (with prerequisites), and normally no more than 18 credits should be taken from any one department.
6. Minimum grade point average of 2.75
7. Before graduation, students will make a public presentation of the results of the capstone project, and submit a current resume and a Portfolio of work submitted.
8. 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.

New Core for Interdisciplinary Studies in Multimodal Interaction

The HTI courses constitute 33 credit hours. Required courses:

- HTI 490 - Capstone Preparation Credits: 3-6
- HTI 495 - Work Experience Credits: 3-6
- HTI 499 - Capstone in Interdisciplinary Studies in Multimodal Interaction Credits: 3-6

International Affairs

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to graduate: 120

Minimum Cumulative GPA required to graduate: 2.0

Minimum number of credits required to complete the major: 39

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: Cumulative GPA of 2.0 or better in the courses in the major field that are credited toward the major

Required Course(s) for fulfilling the Capstone Experience: Capstone course in major field of concentration on a topic in international affairs; or approved upper-level course in concentration modified to conform to capstone requirement; or directed research independent study in the major field of a concentration; or HON 498/499 on an appropriate topic.

Courses satisfying the writing intensive requirement within the major: Refer to the concentration listed below.

Residency Requirement: 18 credits (15 credits in the concentration plus capstone experience).

Contact Information: Kristin Vekasi, Associate Professor, Director, 207.581.1871, kristin.vekasi@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.

For more information about our undergraduate and graduate programs, program learning outcomes, internships, special resources and programs, and research and career opportunities, see our web site at <https://umaine.edu/internationalaffairs/>

Information about the International Affair major

Course overlap: Students may only "double count" two courses (6 credits) to fulfill both IA and program requirements for a second major.

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 240 - Creation of the Atlantic World, 1450-1888 **Credits:** 3
- or
- 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 or ANT 460 or ANT 497 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

- Students must demonstrate their linguistic ability through a language exam, known as the Oral Proficiency Interview. A score of Intermediate (Low, Mid, or High) is required. For details on scheduling the OPI and its associated cost, contact the chair of the Department of Modern Languages and Classics and see the major web page.
- Minimum preparation for the Oral Proficiency Interview (OPI) is assumed to be six (6) credits at the 300 level or above in French or Spanish.
- Students who wish to select German or one of the other languages taught in the Critical Languages program must consult the Chair of the Department of Modern Languages and Classics. As students choosing one of these languages cannot be guaranteed sufficient class time to reach intermediate status, they must plan to participate in an intensive immersion experience in the United States or through study abroad. The Chair of the Department of Modern Languages and Classics will notify a student's academic advisor and the IA Director whenever a language other than French or Spanish is chosen.
- International students are permitted to meet the language requirement with their TOEFL score, but are encouraged to undertake further foreign language study.
- Students may not use their native language to meet the language requirement.

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 and INA 201 and INA 310 as primary field):

- ANT 249 - Religion and Violence **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**
- INA 201 - Topics in International Affairs **Credits: 3**
- INA 310 - Camden Conference Course **Credits: 3**
- POS 369 - Topics in International Relations **Credits: 3**
- POS 370 - Terrorism **Credits: 3**
- POS 372 - Canadian Foreign Policy **Credits: 3**
- POS 374 - American Foreign Policy **Credits: 3**
- POS 376 - Politics of the Global Economy **Credits: 3**
- POS 378 - Theories of War and Peace **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**
- SOC 308 - 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**
- 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 278 - American Military History **Credits: 3**
- HTY 279 - European Military History **Credits: 3**
- HTY 312 - Furs, Frontiers, and Fame: North American Exploration **Credits: 3**
- HTY 341 - The Making of Modern China **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: The Age of Reform **Credits: 3**
- HTY 407 - The Age of Monarchs and Revolution: Europe, 1648-1815 **Credits: 3**
- HTY 409 - European Society and Culture in the Age of Total War **Credits: 3**
- HTY 427 - Vikings! **Credits: 3**
- HTY 432 - History of Modern Ideas **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 450 - History of the British Empire **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**
- HTY 480 - Global Environmental History **Credits: 3**
- HTY 481 - Amerindians of the Northeast: A History **Credits: 3**
- POS 369 - Topics in International Relations **Credits: 3**
- POS 378 - Theories of War and Peace **Credits: 3**
- POS 476 - Seminar in World Politics **Credits: 3**
- POS 470 - International Law **Credits: 3**

C. Comparative Politics and Area Studies

(POS and INA 310 as primary field):

- ANT 249 - Religion and Violence **Credits: 3**
- ANT 252 - Civilization in South Asia **Credits: 3**
- ANT 256 - Ethnic Conflict **Credits: 3**
- ANT 451 - Native American Cultures and Identities **Credits: 3**
- HTY 460 - Modern Canada **Credits: 3**
- INA 310 - Camden Conference Course **Credits: 3**
- 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 372 - Canadian Foreign Policy **Credits: 3**
- POS 467 - African Politics **Credits: 3**
- POS 470 - International Law **Credits: 3**
- WGS 340 - Transnational Feminisms **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 - Anthropology Senior Seminar & Capstone Research Project **Credits: 3**
- Alternatively, with approval, students may fulfill the capstone requirement with ANT 460, ANT497 or the Honors thesis (HON 498/499). Double majors: If IA is your secondary major, the capstone from your primary major may fulfill your IA capstone requirement as long as there is an international affairs component to it (chair approval required). However, the earned credits of your primary capstone experience/course will not count toward the minimum number of credits required for the IA major.

Electives 21 credits (C or better):

- ANT 120 - Religions of the World **Credits: 3**
- ANT 212 - The Anthropology of Food **Credits: 3**
- ANT 225 - Climate Change, Societies and Cultures **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 295 - American Indians and Climate Change **Credits: 3**
- ANT 311 - Geography of Climate Change **Credits: 3**
- ANT 350 - Mediterranean Ancient Landscapes Modern World **Credits: 3**
- ANT 410 - Human Dimensions of Climate Change **Credits: 3**
- ANT 430 - Who Owns Native Cultures? **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 464 - Ecological Anthropology **Credits: 3**
- ANT 466 - Economic Anthropology **Credits: 3**
- GEO 100 - World Geography **Credits: 3**
- GEO 275 - Geography of Globalization **Credits: 3**
- Secondary Electives:*
- HTY 105 - History of Ancient and Medieval Europe **Credits: 3**
- HTY 106 - History of Modern Europe **Credits: 3**
- HTY 107 - East Asian Civilization **Credits: 3**
- HTY 108 - India: Identities and Changes **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**
- INA 201 - Topics in International Affairs **Credits: 3**
- INA 310 - Camden Conference Course **Credits: 3**
- INA 401 - Advanced Topics in International Affairs **Credits: 3**
- POS 241 - Introduction to Comparative Politics **Credits: 3**
- POS 376 - Politics of the Global Economy **Credits: 3**
- POS 378 - Theories of War and Peace **Credits: 3**
- POS 467 - African Politics **Credits: 3**
- WGS 340 - Transnational Feminisms **Credits: 3**
- WGS 371 - Border-crossing: Gendered Perspectives on Modern Migration **Credits: 3**

E. Economics

(IA-ECO):

- ECO 120 - Principles of Microeconomics **Credits: 3**
- ECO 220 - Intermediate Microeconomic Theory **Credits: 3**
- ECO 221 - Intermediate Macroeconomics **Credits: 3**
- ECO 266 - Principles of Economic Data Analysis **Credits: 3**

- ECO 339 - International Finance **Credits:** 3
- ECO 340 - The Canadian Economy: Issues and Policies **Credits:** 3
- ECO 353 - Money and Banking **Credits:** 3
- ECO 381 - SL: Sustainability Science, Policy, and Action **Credits:** 3
- ECO 385 - Econometrics **Credits:** 3
- ECO 450 - International Environmental Economics and Policy **Credits:** 3
- ECO 470 - Independent Capstone **Credits:** 3
- ECO 496 - Field Experience in Economics **Credits:** 3
- ECO 497 - Independent Studies **Credits:** 1-3
- INA 310 - Camden Conference Course **Credits:** 3
- POS 376 - Politics of the Global Economy **Credits:** 3
- 2 non-ECO courses related to international issues or topics from the same secondary field

F. Language, Culture and the Humanities

(French or Spanish as primary field):

21 credits at the 300 or 400 level in French or Spanish beyond the IA Language Experience Requirement (ACTFL OPI rating of "Intermediate"), and 6 credits in a single discipline outside Modern Languages and Classics listed below.

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 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 - Introduction to 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)
- WGS 103 - Introduction to Lesbian, Gay, Bisexual, Transgender, and Queer Studies **Credits: 3**
- WGS 201 - Topics in Women's, Gender, and Sexuality Studies **Credits: 3**
- WGS 250 - Women and Music **Credits: 3**
- WGS 270 - Gender in Native American Cultures **Credits: 3**
or
- NAS 270 - Gender in Native American Cultures **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 378 - Theories of War and Peace **Credits: 3**

Journalism

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to graduate: 120

Minimum number of credits required to complete the major: 30

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: Cumulative GPA of 2.0 or better in the courses in the major field that are credited toward the major.

Required Course(s) for fulfilling Capstone Experience: CMJ 489

Residency Requirement: 24 credits of CMJ courses must be taken at the University of Maine.

Contact Information: Judith Rosenbaum-Andre, Chair, 414 Dunn Hall, judith.rosenbaumandre@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.

For more information about our undergraduate and graduate programs, program learning outcomes, internships, special resources and programs, and research and career opportunities, see our web site at <https://cmj.umaine.edu/>.

Information about the Journalism major

Students must earn a grade of C- or higher in CMJ 136 in order to continue in the Journalism major and to take the following CMJ courses: CMJ 237, CMJ 332, CMJ 351, CMJ 395, CMJ 434, CMJ 435, CMJ 481, CMJ 484 and CMJ 489

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 C- or higher in CMJ 136 in order to continue in the Journalism major and to take the following CMJ courses: CMJ 237, CMJ 332, CMJ 351, CMJ 395, CMJ 434, CMJ 435, CMJ 481, CMJ 484 and CMJ 489.

A grade of C- or higher is required in all CMJ courses submitted to satisfy departmental requirements for the major.

Core Course Requirements - 5 courses (16 credits)

- CMJ 136 - Journalism Writing and Editing **Credits:** 3
- CMJ 211 - Journalism and Media History **Credits:** 3
- CMJ 237 - Journalism Across Platforms **Credits:** 4
- CMJ 375 - Journalism and Media Law **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

Students can take up to nine credits of either CMJ 395 or CMJ 495 (or a combination of both), but only three of those credits will count toward their major. The additional six hours of CMJ 395 or CMJ 495 will count toward the required 120 credit hours for a Bachelor's degree as elective credits but will not meet any specific requirement in CMJ.

Professional Course Requirement: 2 or more courses (6 or more credits)

- CMJ 332 - Public Affairs Reporting and Research **Credits:** 3
- CMJ 351 - Audio and Video Production **Credits:** 4
- CMJ 434 - Editorial and Opinion 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

Electives: (Up to 6 credit hours may be taken to complete 30 credit hours required)

- CMJ 111 - Introduction to Journalism **Credits:** 3
- CMJ 261 - Photographic Reporting and Storytelling **Credits:** 3
- CMJ 314 - International Media **Credits:** 3
- CMJ 330 - Copy Editing **Credits:** 3
- CMJ 367 - Public Relations **Credits:** 3
- CMJ 380 - Advertising, Media and Society **Credits:** 3
- CMJ 391 - Topics in Journalism **Credits:** 3
- CMJ 435 - Feature Writing **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 **60** credit hours outside of CMJ courses.

Suggested four-year plan for the B.A. in Journalism

First Year - First Semester

- ENG 101 - College Composition **Credits:** 3
- Electives/General Education Requirements Credits: 12

First Year - Second Semester

- CMJ 136 - Journalism Writing and Editing **Credits:** 3
- Electives/General Education Requirements Credits: 12

Second Year - First Semester

- CMJ 237 - Journalism Across Platforms **Credits: 4**
- Journalism Elective Credits: 3
- Electives/General Education Requirements Credits: 9

Second Year - Second Semester

- CMJ 211 - Journalism and Media History **Credits: 3**
- Journalism Professional Course: 3-4
- Electives/General Education Requirements Credits: 9

Third Year - First Semester

- Journalism Professional Course: 3-4
- Journalism Elective Credits: 3
- **Elective Credits: 9

Third Year - Second Semester

- Journalism Professional Course: 3-4
- CMJ 375 - Journalism and Media Law **Credits: 3**
- ** Elective Credits: 9

Fourth Year - First Semester

- CMJ 495 - Internship **Credits: 1-3**
- CMJ External Requirement Credits: 9
- **Elective Credits: 6

Fourth Year - Second Semester

- CMJ 489 - Seminar in Media Ethics and Issues **Credits: 3**
- **Elective Credits: 12

**Elective Credits

Elective Credits may be used to meet remaining General Education, college, B.A., or department requirements.

Students may also take additional credits in department courses beyond the 30 required for the major, but must take at least 60 credit hours outside of CMJ courses.

Mathematics

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to graduate: 120

Minimum Cumulative GPA required to graduate: 2.0

Minimum number of credits required to complete the major: BA 42; BS 54

Minimum Grade requirements for courses to count toward major: A "C" or better is required in any MAT or STS course 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: MAT 401 or HON 498 and HON 499

Residency requirement: Majors in the College of Liberal Arts & Sciences require a minimum of 15 institutional credits in the major.

Contact Information: Nigel Pitt, Chair, Mathematics & Statistics, 237 Neville Hall, 581-3901, um.mathchair@maine.edu

The BA and BS 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.

For more information about our undergraduate and graduate programs, program learning outcomes, internships, special resources and programs, and research and career opportunities, see our website at <https://umaine.edu/mathematics/>.

The Department of Mathematics maintains the Math Lab in 120 Neville Hall, where students enrolled in lower division mathematics courses can come to collaborate and get supplementary help with their homework assignments. Staffed by faculty and graduate assistants, the Math Lab is open during the academic year.

Information about the Mathematics major

Bachelor of Arts in Mathematics

The BA in mathematics consists of 42 credits, grouped into: core mathematics classes, a probability/statistics requirement, and upper level mathematics electives. Like all BA programs at the University of Maine, it also requires an outside minor or double major.

A student must receive a grade of at least C in a course in order to receive credit toward meeting the requirements for the major.

Core Mathematics Courses (27 credits)

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

Occasionally a student becomes a math major after having already taken MAT 258. Such students may count MAT 258 in place of MAT 262, provided they take MAT 362 as one of their upper level mathematics electives.

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

Probability / Statistics Requirement (3 credits)

At least one STS course at 200 level or above. (STS 132 cannot be used for this requirement.)

Upper Level Mathematics Electives (12 credits)

At least four other approved MAT or STS courses, at most one of which may be at the 200-level, and at least two of which must be at the 400 level or above. These courses should be chosen by the student in consultation with their advisor.

Second major or minor

As with all BA programs within the College of Liberal Arts and Sciences (CLAS), each mathematics BA student 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

- Statistics elective Credits: 3
- Electives (Including courses for completing the University general education requirements) Credits: 3-7

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: 6-9

Fourth Year - First Semester

- One or two MAT courses for the upper-level elective 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

Bachelor of Science in Mathematics

The BS in mathematics consists of 54 credits, grouped into: core mathematics courses, core elective courses, and upper level elective courses. BS students do not need to complete a minor or a second major.

Required Courses (33 credits)

- MAT 126 - Calculus I **Credits: 4**
- MAT 127 - Calculus II **Credits: 4**
- MAT 228 - Calculus III **Credits: 4**
- MAT 259 - Differential Equations **Credits: 3**
- MAT 261 - Introduction to Abstract Mathematics **Credits: 3**
- MAT 262 - Linear Algebra **Credits: 3**
- 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 - Probability Theory **Credits: 3**

Core Electives (12 credits)

- MAT 426 - Introduction to Real Analysis II **Credits: 3 ***
- MAT 451 - Dynamical Systems **Credits: 3**
- MAT 452 - Complex Analysis **Credits: 3**
- MAT 453 - Partial Differential Equations 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 487 - Numerical Analysis **Credits: 3**

At the department chair's discretion, 500-level alternatives to these electives may be substituted.

* Students must choose at least one of MAT 426 and MAT 464, so as to guarantee a year-long experience of one of these two subareas.

Electives (9 credits)

Students may not count more than six credits of elective STS courses toward the BS in Mathematics. Electives should be at the 300-level or above, with at least one at the 400-level or above.

Required Courses in Suggested Sequence for the BS in Mathematics

First Year - First Semester

- MAT 126 - Calculus I **Credits: 4**

First Year - Second Semester

- MAT 127 - Calculus II **Credits: 4**

Second Year - First Semester

- MAT 228 - Calculus III **Credits: 4**
- MAT 261 - Introduction to Abstract Mathematics **Credits: 3**

Second Year - Second Semester

- MAT 259 - Differential Equations **Credits: 3**
- MAT 262 - Linear Algebra **Credits: 3**

Third Year - First Semester

- MAT 425 - Introduction to Real Analysis I **Credits: 3**
- MAT 463 - Introduction to Abstract Algebra I **Credits: 3**

Third Year - Second Semester

- MAT 426 - Introduction to Real Analysis II **Credits:** 3
- MAT 452 - Complex Analysis **Credits:** 3
- STS 434 - Probability Theory **Credits:** 3

Fourth Year - First Semester

- MAT 453 - Partial Differential Equations I **Credits:** 3
- MAT 471 - Differential Geometry **Credits:** 3

Fourth Year - Second Semester

- MAT 401 - Capstone Seminar in Mathematics **Credits:** 3
- MAT 464 - Introduction to Abstract Algebra II **Credits:** 3
- MAT 465 - Theory of Numbers **Credits:** 3

4+1 Program

The Department offers a four plus one (4+1) 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.

Media Studies

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to graduate: 120

Minimum number of credits to complete the major: 30

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.

Residency Requirement: 24 credits of CMJ courses at the University of Maine.

Required Course(s) for fulfilling Capstone Experience: CMJ 483

Contact Information: Judith Rosenbaum-Andre, Chair, 414 Dunn Hall, judith.rosenbaumandre@maine.edu

The Department of Communication and Journalism offers three different B.A. degrees. These degrees are in: Communication, Journalism, and Media Studies.

Firmly grounded in the liberal arts, the B.A. degree in Media Studies 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 media studies theories and research issues necessary for graduate study in related communication fields, the humanities and social sciences.

Majors in Media Studies 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 201, ENG 205, ENG 206, ENG 301, ENG 315, ENG 317, and ENG 415. CMJ 136 can also be used to meet part of this requirement for Media Studies 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 Media Studies 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 - Media Theories and Research Methods **Credits:** 3
- CMJ 376 - Modes of Media Criticism **Credits:** 3

- CMJ 483 - Capstone Seminar in Media Studies **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 Media Studies **Credits: 3**
- CMJ 107 - Communication and the Environment **Credits: 3**
- CMJ 211 - Journalism and Media History **Credits: 3**
- CMJ 245 - Film Criticism and Theory **Credits: 3**
- CMJ 314 - International Media **Credits: 3**
- CMJ 367 - Public Relations **Credits: 3**
- CMJ 370 - Visual Communication **Credits: 3**
- CMJ 375 - Journalism and Media Law **Credits: 3**
- CMJ 380 - Advertising, Media and Society **Credits: 3**
- CMJ 398 - Topics in Media Studies **Credits: 3**
- CMJ 402 - Communication Research **Credits: 3**
- CMJ 403 - Persuasion and Social Influence **Credits: 3**
- CMJ 404 - Risk Communication **Credits: 3**
- CMJ 425 - SL: Health Campaigns **Credits: 3**
- CMJ 450 - Communication and Technology **Credits: 3**
- CMJ 495 - Internship **Credits: 1-3**

Additional credits:

Students also may take additional credits in department courses beyond the 30 required for the major, but must take at least **60** credit hours outside of CMJ courses.

Required Courses in Suggested Sequence for BA in Media Studies

First Year - First Semester

- CMJ 100 - Introduction to Media Studies **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 203 - Media Theories and Research Methods **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 211 - Journalism and Media History **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 Media Studies **Credits: 3**
- ** Elective Credits: 12

**Elective Credits

Elective Credits may be used to meet remaining General Education, college, B.A., or department requirements.

Students may also take additional department courses beyond the 30 credits required for the major, but must take at least 60 credit hours outside of CMJ courses.

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: Cumulative GPA of 2.0 or better in the courses in the major field that are credited toward the major.

Required Course(s) for fulfilling Capstone Experience: MUS 498; HON 498 and 499 (BA only) may replace MUS 498 (Senior Capstone) if the student seeks permission from the BA in Music advisor prior to beginning thesis work; thesis work must be comparable to work done in MUS 498 in order to be approved. The thesis proposal form must be signed by the chair of the Division of Music.

Residency requirement: Majors in the College of Liberal Arts & Sciences require a minimum of 15 institutional credits in the major.

Contact Information: Philip Edelman, Associate Professor, Director of the School of Performing Arts, Class of 1944 Hall, Room 208, 207.581.1257, philip.edelman@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.

For more information about our undergraduate and graduate programs, program learning outcomes, internships, special resources and programs, and research and career opportunities, see our web site at <https://umaine.edu/spa/>

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

Note: The BA in Music 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.

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 Theory Fundamentals **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

(Note that only the courses marked with an asterisk* are requirements for the B.A. in Music with a Concentration in Jazz Studies - see the full Jazz Studies requirement list below)

Suggested four-year plan 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

B.A. Music with Concentration in Jazz Studies

This program is designed to provide in-depth study in the field of jazz. The course requirements are different from the B.A. in Music (with some overlap).

B.A. Music with Concentration in Jazz Studies Requirements:

- MUH 150 - History of Jazz **Credits: 3**
- MUL 200 - Music Literature Laboratory **Credits: 1**
- MUP 205 - Piano Class I **Credits: 1**
- MUP 206 - Piano Class II **Credits: 1**
- MUS 100 - Recital Laboratory **Credits: 0** (each semester of applied lessons)
- MUS 150 - Majoring in Music **Credits: 1**

- MUS 498 - Senior Project **Credits: 3**
- MUY 111 - Elementary Harmony I **Credits: 2**
- MUY 112 - Elementary Harmony II **Credits: 2**
- MUY 113 - Elementary Sight Singing and Ear Training I **Credits: 2**
- MUY 114 - Elementary Sight Singing and Ear Training II **Credits: 2**
- MUY 211 - Advanced Harmony I **Credits: 2**
- MUY 212 - Advanced Harmony II **Credits: 2**
- MUY 213 - Advanced Sight Singing and Ear Training I **Credits: 2**
- MUY 214 - Advanced Sight Singing and Ear Training II **Credits: 2**
- MUY 310 - Jazz Theory Fundamentals **Credits: 3**
- MUY 410 - Jazz Arranging **Credits: 3**
- MUY 411 - Jazz Piano **Credits: 3**
- MUY 412 - Jazz Pedagogy **Credits: 3**
- Applied Music Lessons Credits: 8
- Jazz Performing Organizations Credits: 4
(MUO 143 Jazz Ensemble; MUO 155 Chamber Jazz Ensemble)
- Music Electives Credits: 4
(applied lessons, ensembles, other music courses)

Suggested four-year plan for the B.A. in Music with Concentration in Jazz Studies

First Year - First Semester

- MUP 205 - Piano Class I **Credits: 1**
- MUS 100 - Recital Laboratory **Credits: 0**
- MUS 150 - Majoring in Music **Credits: 1**
- MUY 111 - Elementary Harmony I **Credits: 2**
- MUY 113 - Elementary Sight Singing and Ear Training I **Credits: 2**
- Applied Music Lessons Credits: 2
- MUO XXX Jazz Performing Organization Credits: 1-2
- General Education or College Requirement Credit: 5-6

First Year - Second Semester

- MUL 200 - Music Literature Laboratory **Credits: 1**
- MUP 206 - Piano Class II **Credits: 1**
- MUS 100 - Recital Laboratory **Credits: 0**
- MUY 112 - Elementary Harmony II **Credits: 2**
- MUY 114 - Elementary Sight Singing and Ear Training II **Credits: 2**
- Applied Music Lessons Credit: 2
- MUO XXX Jazz Performing Organization Credit: 1-2
- General Education or College Requirement Credit: 5-6

Second Year - First Semester

- MUS 100 - Recital Laboratory **Credits: 0**
- MUY 211 - Advanced Harmony I **Credits: 2**

- MUY 213 - Advanced Sight Singing and Ear Training I **Credits: 2**
- Applied Music Lessons Credit: 2
- MUO XXX Jazz Performing Organization Credits: 1-2
- General Education or College Requirement Credit: 7-8

Second Year - Second Semester

- MUS 100 - Recital Laboratory **Credits: 0**
- MUY 212 - Advanced Harmony II **Credits: 2**
- MUY 214 - Advanced Sight Singing and Ear Training II **Credits: 2**
- Applied Music Lessons Credits: 2
- MUO XXX Jazz Performing Organization Credits: 1-2
- General Education Requirements Credits: 7-8

Third Year - First Semester

- MUY 310 - Jazz Theory Fundamentals **Credits: 3**
- Elective Credit: 1
- General Education or College Requirement Credit: 11

Third Year - Second Semester

- MUH 150 - History of Jazz **Credits: 3**
- MUY 412 - Jazz Pedagogy **Credits: 3**
- Elective Credit: 1
- General Education or College Requirement Credit: 8

Fourth Year - First Semester

- MUY 410 - Jazz Arranging **Credits: 3**
- Elective Credit: 1
- General Education or College Requirement Credit: 11

Fourth Year - Second Semester

- MUS 498 - Senior Project **Credits: 3**
- MUY 411 - Jazz Piano **Credits: 3**
- Elective Credit: 3
- General Education or College Requirement Credit: 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 "B-" or higher is required for all MUE Courses that are credited toward the major. In addition, a "B-" or higher is required for SED 302, EHD 202, and EHD 203. 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: Cumulative GPA of 2.0 or better in the courses in the major field that are credited toward the major.

Required Course(s) for fulfilling Capstone Experience: 12 credits of EHD 494

Residency requirement: Majors in the College of Liberal Arts & Sciences require a minimum of 15 institutional credits in the major.

Contact Information: Philip Edelman, Associate Professor, Director of the School of Performing Arts, Class of 1944 Hall, Room 208, 207.581.1257, philip.edelman@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.

For more information about our undergraduate and graduate programs, program learning outcomes, internships, special resources and programs, and research and career opportunities, see our web site at <https://umaine.edu/spa>.

Information about the Music Education major

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.

Instrumental Track: Follow requirements for Instrumental concentration. See Music Division Undergraduate Handbook for a list of large and small ensembles.

Suggested four-year plan for the BM 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: 2**
- 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 - General Music Methods: 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 - General Music Methods: 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 Administration of Secondary Music Performance Programs **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**

Suggested four-year plan for the BM in Music Education

B.M. Degree in Music Education - Piano concentration: Vocal Track

First Year - First Semester

- MUE 207 - Voice Class **Credits: 2**
- 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 - General Music Methods: 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 - General Music Methods: 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 401 - Organization and Administration of Secondary Music Performance Programs **Credits: 3**
- MUO XXX Ensemble(s) Credits: 1-2
- MUS Elective Credits: 5
- General Education Requirement Credits: 9

Fourth Year - Second Semester

- EHD 494 - Student Teaching K-12 (Art or Music) **Credits: 1 - 12**

Suggested four-year plan for the BM 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 III **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 IV **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: 2**
- MUE 209 - String Class **Credits: 2**
- MUE 320 - General Music Methods: 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 - General Music Methods: 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 Administration of Secondary Music Performance Programs **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**

Suggested four-year plan for the BM 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 III **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 IV **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 - General Music Methods: 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 - General Music Methods: 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 401 - Organization and Administration of Secondary Music Performance Programs **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: Cumulative GPA of 2.0 or better in the courses in the major field that are credited toward the major.

Required Course(s) for fulfilling Capstone Experience: Full hour recital required in Senior year.

Residency requirement: Majors in the College of Liberal Arts & Sciences require a minimum of 15 institutional credits in the major.

Contact Information: Philip Edelman, Associate Professor, Director of the School of Performing Arts, Class of 1944 Hall, Room 208, 207.581.1257, philip.edelman@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.

For more information about our undergraduate and graduate programs, program learning outcomes, internships, special resources and programs, and research and career opportunities, see our web site at <https://umaine.edu/spa/>

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.

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

- MUH 150 (History of Jazz)
or
- MUS 510 Topics as approved by the Music History Faculty,
or
- WGS 250 (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.

Suggested four-year plan 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

Suggested four-year plan 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**
- 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

Suggested four-year plan 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 number of credits required to complete the major: 48

Minimum Grade requirements for courses to count toward major: New Media majors must have a "C-" or better in each course credited to the major.

Other GPA requirements to graduate: Cumulative GPA of 2.0 or better in the courses in the major field that are credited toward the major.

Required Course(s) for fulfilling Capstone Experience: NMD 498 and NMD 499

Residency Requirement: 24 credits

Course satisfying the writing intensive requirement within the major: NMD 498

Contact Information: Velma Figgins, Administrative Specialist, 5711 Boardman Hall, Room 348, 207-581-4358

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.

For more information about our undergraduate and graduate programs, program learning outcomes, internships, special resources and programs, and career opportunities, see our web site at for a complete description of our undergraduate and graduate programs, program learning outcomes, internships, special resources and programs, and career opportunities, see our web site at <https://umaine.edu/newmedia/>

Information about the New Media major

Foundation Requirements - 18 credits

- NMD 100 - Introduction to New Media **Credits:** 3
- NMD 104 - New Media Design **Credits:** 3
- NMD 106 - Time-Based Media **Credits:** 3
- NMD 200 - Designing Humane Tech **Credits:** 3
- NMD 211 - Creative Coding II **Credits:** 3

One of the following additional courses is required:

- NMD 105 - Creative Coding I **Credits:** 3
- COS 120 - Introduction to Programming I **Credits:** 3
- COS 125 - Introduction to Problem Solving Using Computer Programming **Credits:** 4
- COS 220 - Introduction to C++ Programming **Credits:** 3
- ECE 177 - Introduction to Programming for Engineers **Credits:** 4

Project-Based Requirements: (9 credits)

Students must take all of the following classes:

- NMD 306 - Community Collaboration and Development **Credits: 3**
- NMD 498 - New Media Capstone I **Credits: 3**
- NMD 499 - New Media Capstone II **Credits: 3**

Category Requirements: (18 credits)

Students must take a minimum of two courses from each of the following three categories, for a total of 18 credits:

Category 1 (Technical/Conceptual)

- NMD 340 - Designing and Creating Websites **Credits: 3**
- NMD 342 - Interaction Design and Physical Computing **Credits: 3**
- NMD 345 - Web Applications **Credits: 3**
- NMD 442 - User Experience Design **Credits: 3**

Category 2 (Perceptual/Conceptual)

- NMD 341 - Documentary Photography and Storytelling **Credits: 3**
- NMD 343 - SL: Digital Narrative Workshop I **Credits: 3**
- NMD 344 - Motion Graphics & Design I **Credits: 3**

Category 3 (Advanced)

- NMD 440 - SL: Websites for Clients & Communities **Credits: 3**
- NMD 443 - Digital Narrative Workshop II **Credits: 3**
- NMD 444 - Motion Graphics & Design II **Credits: 3**
- NMD 445 - Mobile Applications **Credits: 3**

New Media Electives (Minimum of 3 credits)

Students must take a minimum of one New Media Elective. Electives may include any of the New Media Category 1, 2 and 3 courses not already taken or any additional NMD elective courses offered (listed below). New Media electives may be taken prior to the senior year by planning your schedule appropriately. New Media elective courses available might include:

- NMD 212 - Rapid Prototyping **Credits: 3**
- NMD 245 - Film Criticism and Theory **Credits: 3**
- NMD 250 - Electronic Music Composition I: Item and Arrangement **Credits: 3**
- NMD 251 - Electronic Music Composition II: Composing a Process **Credits: 3**
- NMD 324 - Introduction to Narrative Film Making **Credits: 3**
- NMD 358 - Documentary Film Criticism and Theory **Credits: 3**
- NMD 370 - 3D Modeling and Animation **Credits: 3**
- NMD 424 - Narrative Film Making **Credits: 3**
- NMD 441 - Documentary Video and Storytelling **Credits: 3**
- Special topics and independent study courses might additionally be available include:
- NMD 295 - Topics in New Media **Credits: 1-3**

- NMD 398 - Topics in New Media **Credits:** 1-3
- NMD 430 - Topics in New Media **Credits:** 1-3
- NMD 490 - Independent Study in New Media **Credits:** 3

Suggested four-year plan for the BA in NMD

The following is the recommended four-year sequencing for courses for New Media majors. Students may rearrange the ordering of courses with their advisor assuming course prerequisites are met.

First Year - First Semester

- ENG 101 - College Composition **Credits:** 3
- NMD 100 - Introduction to New Media **Credits:** 3
- NMD 104 - New Media Design **Credits:** 3
- General Education Requirement (Math)
- General Education Requirement (Science)

First Year - Second Semester

- NMD 105 - Creative Coding I **Credits:** 3
- NMD 106 - Time-Based Media **Credits:** 3
- General Education Requirement
- General Education Requirement (Math)
- General Education Requirement (Ethics)

Second Year - First Semester

- NMD 200 - Designing Humane Tech **Credits:** 3
- NMD 211 - Creative Coding II **Credits:** 3
- General Education Requirement (Lab Science)
- General Education Requirement
- Minor

Second Year - Second Semester

- New Media Elective Credits: 3 (Required)
- Category 1 or 2 course
- General Education Requirement
- General Education Requirement
- Minor

Third Year - First Semester

- ENG 315 - Research Writing in the Disciplines **Credits:** 3
OR

- ENG 317 - Business and Technical Writing **Credits:** 3 ¹
- Category 1 or 2 Course
- Category 1 or 2 Course
- Category 1 or 2 Course
- Minor

Third Year - Second Semester

- NMD 306 - Community Collaboration and Development **Credits:** 3
- Category 3 Course
- Category 3 Course
- General Education Requirement
- Minor

Fourth Year - First Semester

- NMD 498 - New Media Capstone I **Credits:** 3
- Free Elective (May be NMD elective)
- Free Elective (May be NMD elective)
- Free Elective
- Minor

Fourth Year - Second Semester

- NMD 499 - New Media Capstone II **Credits:** 3
- Free Elective (may be NMD elective)
- Free Elective (may be NMD elective)
- Free Elective
- Minor

Note:

Students wishing to study abroad should schedule their away time the spring of their sophomore year or the fall of their junior year.

Philosophy

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to graduate: 120

Minimum Cumulative GPA required to graduate: 2.0

Minimum number of credits required to complete the major: 30

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: Cumulative GPA of 2.0 or better in the courses in the major field that are credited toward the major.

Required Course(s) for fulfilling Capstone Experience: PHI 475; HON 498/499 on a topic in Philosophy and advised (or co-advised) by a philosophy faculty member.

Courses satisfying the writing intensive requirement within the major: PHI 201, PHI 344, PHI 346, PHI 432, and PHI 475

Residency requirement: Majors in the College of Liberal Arts & Sciences require a minimum of 15 institutional credits in the major.

Contact Information: Kirsten Jacobson, Chair, Department of Philosophy, The Maples 109, 581-3848, kirsten.jacobson@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.

For more information about our undergraduate program, program learning outcomes, internships, special resources and programs, and research and career opportunities, see our web site at <https://umaine.edu/philosophy/>.

Information about the Philosophy major

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 244 - Philosophy of Law **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**
or
PHI 221 - Classical Chinese Philosophy Credits: 3
- PHI 312 - History of Modern Philosophy **Credits: 3**
and one of the following:
PHI 210 - History of Ancient Philosophy
- PHI 212 - Hegel and 19th Century Philosophy **Credits: 3**
- PHI 214 - 20th Century Continental Philosophy **Credits: 3**
- PHI 221 - Classical Chinese Philosophy **Credits: 3**
- PHI 287 - Buddhist Philosophy **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**

Capstone Course:

- PHI 475 - Junior/Senior Philosophy Seminar **Credits: 3**
(Requirement may be waived if relevant thesis is pursued via HON 498 and 499. Department approval is required. Contact the chair of the Department of Philosophy prior to pursuing this route to discuss this process and secure permission.)

Completion of the College of Liberal Arts and Sciences requirement for the B.A. degree (for students admitted for Fall 2011 and after), including a minor outside the field of the major or a double major. For students admitted prior to Fall 2011, the old B.A. requirements remain in effect unless you choose to adopt the new B.A. requirements. If you have questions, please contact your advisor.

First Year

Two philosophy courses without prerequisites at the 100- or 200-level.

Second Year

- Two courses that meet the department's history requirement
- One course that meets the department's ethics requirement

Third Year

- One course that meets the department's logic requirement
- One course that meets the department's history requirement
- One elective at the 200 level or higher

Fourth Year

Two 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 132 - Life, Technology and Evolution **Credits: 3**
- PHI 201 - Becoming a Philosopher **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 221 - Classical Chinese Philosophy **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 242 - Ethics in Professional Life **Credits: 3**
- PHI 244 - Philosophy of Law **Credits: 3**
- PHI 250 - Formal Logic **Credits: 3**
- PHI 262 - Philosophy of Art **Credits: 3**
- PHI 287 - Buddhist Philosophy **Credits: 3**
- PHI 312 - History of Modern Philosophy **Credits: 3**
- PHI 317 - Existentialism and Phenomenology **Credits: 3**
- PHI 332 - Environmental 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**
- PHI 351 - Topics in Philosophy and Literature **Credits: 3**
- PHI 353 - Minds and Machines **Credits: 3**
- PHI 360 - Metaphysics **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 Justice **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

Elective Credits

Elective credits may be used to meet remaining general education, college, B.A., or department requirements.

Physics

OVERVIEW OF DEGREE REQUIREMENTS - Bachelor of Arts and Bachelor of Science in Physics

Minimum number of credits required to graduate: 120

Minimum Cumulative GPA required to graduate: 2.0

Minimum number of credits required to complete the major: BA 38; BS 55 (plus requirements in related disciplines)

Minimum Grade requirements for courses to count toward major: Physics courses require a C- or better to satisfy a prerequisite.

Other GPA requirements to graduate: Cumulative GPA of 2.0 or better in the courses in the major field that are credited toward the major.

Required Course(s) for fulfilling Capstone Experience: PHY 400 and PHY 481 or PHY 400 and PHY 482. HON 498/ 499 are exempt from taking PHY481 (Project Laboratory in Physics I) and PHY482 (Project Laboratory in Physics II) but do have to complete the project assignments in those courses. Honors thesis proposal form must have the signature of the chair of the Department of Physics and Astronomy.

Courses satisfying the writing intensive requirement within the major: PHY 364 and PHY 365

Residency requirement: Majors in the College of Liberal Arts & Sciences require a minimum of 15 institutional credits in the major.

Contact Information: MacKenzie Stetzer, Associate Professor, Acting Chair, Department of Physics and Astronomy, 120 Bennett Hall, 207.581.1039, umphysicschair@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.

For more information about our undergraduate and graduate programs, program learning outcomes, internships, special resources and programs, and research and career opportunities, see our web site at <https://physics.umaine.edu/>.

Information about the Physics major

- 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 Maine College of Engineering and Computing 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.

Requirements for the BA in Physics

- A minimum of 38 credits in physics. The 38 credits in physics (beyond PHY 100 , our first-year success course) must include PHY 121 and PHY 122 (or PHY 111 and PHY 112), PHY 200, PHY 223, PHY 231, PHY 236, PHY 241, PHY 261, PHY 262, PHY 364 (or PHY 365), PHY 400, PHY 451, PHY 454, and PHY 481 and one Physics Elective for 3 credits.
- CHY 121 CHY 123
- ENG 101
- 15 credits in mathematics, which must include MAT 126, MAT 127, MAT 228, MAT 259 or their equivalents.
- First-year students must take PHY 100 .

Note: 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 463, Statistical Mechanics; PHY 470, Nuclear Physics; PHY 480, Physics of Materials; as well as additional courses in mathematics.

Suggested four-year plan for the B.A. in Physics Model 1

The following curriculum shows how a typical student can complete the requirements with physics courses spread out over four years. There are many other possible arrangements, and usually the student will design an individualized program with an advisor from the Department of Physics and Astronomy.

Minimum Total Credits in the BA in Physics Program: 120 (without PHY 100).

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**
or
- PHY 111 - General Physics I **Credits: 4**
- Human Value/Social Context and Ethics Elective¹ Credits: 3

First Year - Second Semester

- MAT 127 - Calculus II **Credits: 4**
- PHY 122 - Physics for Engineers and Physical Scientists II **Credits: 4**
or
- PHY 112 - General Physics II **Credits: 4**
- Human Values/Social Context and Ethics Elective¹ Credits: 3
- Elective Credits: 3

Second Year - First Semester

- CHY 121 - General Chemistry I **Credits: 3**
- CHY 123 - General Chemistry Laboratory I **Credits: 1**
- MAT 228 - Calculus III **Credits: 4**
- PHY 200 - Career Preparation in Physics and Engineering Physics I **Credits: 1**
- PHY 261 - Physical Measurements Laboratory **Credits: 2**
- PHY 236 - Introductory Quantum Physics **Credits: 3**

Second Year - Second Semester

- MAT 259 - Differential Equations **Credits:** 3
- PHY 223 - Special Relativity **Credits:** 1
- PHY 231 - Mathematical Methods in Physics **Credits:** 3
- PHY 241 - Computational Physics **Credits:** 3
- PHY 262 - Electronics **Credits:** 2
- Human Values/Social Context and Ethics Elective¹ or Elective Credits: 3

Third Year - First Semester

- PHY 364 - Modern Experimental Physics **Credits:** 2
- PHY 451 - Mechanics **Credits:** 3
- PHY 454 - Electricity and Magnetism I **Credits:** 3
- Human Values/Social Context and Ethics Elective(s) IV¹ and/or Elective(s) and/or Physics Elective(s) Credits: 6

Third Year - Second Semester

- PHY 365 - Mechanics Laboratory **Credits:** 2
- Human Values/Social Context and Ethics Elective(s)¹ and/or Elective(s) and/or Physics Elective(s) Credits: 12

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
- Human Values/Social Context and Ethics Elective(s)¹ and/or Elective(s) and/or Physics Elective(s) Credits: 12

Fourth Year - Second Semester

- Human Values/Social Context and Ethics Elective(s)¹ and/or Elective(s) and/or Physics Elective(s) Credits: 15

Suggested four-year plan for the B.A. in Physics Model 2

The following curriculum is designed for those students who desire a degree in Physics but who wish greater breadth in background in other areas of science - such as biological, geological, chemical or environmental sciences. The program outlined below enables a student to begin a major in Physics during the sophomore year.

Minimum Total Credits in the BA in Physics Program: 120 (without PHY 100)

First Year - First Semester

- ENG 101 - College Composition **Credits:** 3
- PHY 100 - Introduction to Physics and Astronomy **Credits:** 1
- Human Value/Social Context and Ethics Elective¹ Credits: 3
- Electives Credits: 9

First Year - Second Semester

- Human Value/Social Context and Ethics Elective¹ Credits: 3
- Electives Credits: 12

Second Year - First Semester

- CHY 121 - General Chemistry I **Credits: 3**
- CHY 123 - General Chemistry Laboratory I **Credits: 1**
- MAT 126 - Calculus I **Credits: 4**
- PHY 121 - Physics for Engineers and Physical Scientists I **Credits: 4**
or
- PHY 111 - General Physics I **Credits: 4**
- PHY 200 - Career Preparation in Physics and Engineering Physics I **Credits: 1**
- Human Value/Social Context and Ethics Elective¹

Second Year - Second Semester

- MAT 127 - Calculus II **Credits: 4**
- PHY 122 - Physics for Engineers and Physical Scientists II **Credits: 4**
or
- PHY 112 - General Physics II **Credits: 4**
- Human Values/Social Context and Ethics Elective¹ and/or Elective Credits: 6

Third Year - First Semester

- MAT 228 - Calculus III **Credits: 4**
- PHY 261 - Physical Measurements Laboratory **Credits: 2**
- PHY 236 - Introductory Quantum Physics **Credits: 3**
- PHY 472 - Geometrical and Fourier Optics **Credits: 3**
- Human Value/Social Context and Ethics Elective¹ Credits: 3

Third Year - Second Semester

- MAT 259 - Differential Equations **Credits: 3**
- PHY 223 - Special Relativity **Credits: 1**
- PHY 231 - Mathematical Methods in Physics **Credits: 3**
- PHY 241 - Computational Physics **Credits: 3**
- PHY 262 - Electronics **Credits: 2**
- Human Values/Social Context and Ethics Elective¹ or Elective Credits: 3

Fourth Year - First Semester

- PHY 364 - Modern Experimental Physics **Credits: 2**
- PHY 400 - Career Preparation in Physics and Engineering Physics II **Credits: 1**
- PHY 451 - Mechanics **Credits: 3**

- PHY 454 - Electricity and Magnetism I **Credits:** 3
- PHY 481 - Project Laboratory in Physics I **Credits:** 3
- Human Values/Social Context and Ethics Elective¹ or Elective or Physics Elective Credits: 3

Fourth Year - Second Semester

- PHY 365 - Mechanics Laboratory **Credits:** 2
- Human Values/Social Context and Ethics Elective(s)¹ and/or Elective(s) and/or Physics Elective(s) Credits: 13

Note

¹Human Values/Social Context and Ethics (HV/SC & E), part of the University General Education Requirement, can be satisfied by a careful selection of at least six three-credit courses.

Requirements for the BS in Physics

- A minimum of 55 credits of physics (3 of which are elective; 56 credits if PHY 100 , our first-year success course, is taken). The physics electives must be chosen from AST 451, PHY 447, PHY 470, PHY 471, PHY 482, PHY 496, PHY 501, or PHY 574.
- 18 credits of mathematics (3 of which are elective; the mathematics elective is usually chosen from MAT 262 , STS 332, STS 434, MAT 452, MAT 453, MAT 454 or MAT 471 . PHY 574 may be used here as the mathematics elective, provided it is not also used as a physics elective.)
- 7 credits of approved science and computer science courses.
- ENG 101
- 36 credits of additional electives (18 of which satisfy the University's General Education Human Values/Social Context and Ethics requirements), for an overall total of 120 credits.
- First-year students must take PHY 100 .
- Note: Five courses in mathematics (in addition to a computer programming course) are required for the BS degree. A minor in mathematics can be earned with one additional mathematics course beyond these five and our required PHY 231 .

The following course schedule represents the suggested curriculum for a typical student in the Bachelor 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 Chair of the Department of Physics and Astronomy.

Suggested four-year plan 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 Elective¹ Credits: 3

First Year - Second Semester

- COS 125 - Introduction to Problem Solving Using Computer Programming **Credits: 4**
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 Elective¹ Credits: 3

Second Year - First Semester

- CHY 121 - General Chemistry I **Credits: 3**
- CHY 123 - General Chemistry Laboratory I **Credits: 1**
- MAT 228 - Calculus III **Credits: 4**
- PHY 200 - Career Preparation in Physics and Engineering Physics I **Credits: 1**
- PHY 261 - Physical Measurements Laboratory **Credits: 2**
- PHY 236 - Introductory Quantum Physics **Credits: 3**

Second Year - Second Semester

- MAT 259 - Differential Equations **Credits: 3**
- PHY 223 - Special Relativity **Credits: 1**
- PHY 231 - Mathematical Methods in Physics **Credits: 3**
- PHY 241 - Computational Physics **Credits: 3**
- PHY 262 - Electronics **Credits: 2**
- Human Values/Social Context and Ethics Elective¹ or Elective Credits: 3

Third Year - First Semester

- PHY 364 - Modern Experimental Physics **Credits: 2**
- PHY 451 - Mechanics **Credits: 3**
- PHY 454 - Electricity and Magnetism I **Credits: 3**
- PHY 472 - Geometrical and Fourier Optics **Credits: 3**
- Human Values/Social Context and Ethics Elective¹ or Elective Credits: 3

Third Year - Second Semester

- PHY 365 - Mechanics Laboratory **Credits: 2**
- PHY 455 - Electricity and Magnetism II **Credits: 3**
- Mathematics Elective Credits: 3
- Human Values/Social Context and Ethics Elective(s)¹ and/or Elective(s) and/or Physics Elective(s) Credits: 9

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 480 - Physics of Materials **Credits:** 3
- PHY 481 - Project Laboratory in Physics I **Credits:** 3
- Human Values/Social Context and Ethics Elective(s)¹ and/or Elective(s) and/or Physics Elective(s) Credits: 6

Fourth Year - Second Semester

- PHY 463 - Statistical Mechanics **Credits:** 3
- Human Values/Social Context and Ethics Elective(s)¹ and/or Elective(s) and/or Physics Elective(s) Credits: 12

Political Science

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to graduate: 120

Minimum Cumulative GPA required to graduate: 2.0

Minimum number of credits required to complete the major: 36

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: Cumulative GPA of 2.0 or better in the courses in the major field that are credited toward the major.

Required Course(s) for fulfilling Capstone Experience: POS 499, or POS 487 and POS 488 taken together or HON 498/499 on a topic in political science. The thesis proposal form must have signature of the chair of the Department of Political Science.

Courses satisfying the writing intensive requirement within the major: HON 499, POS 301, POS 303, POS 304, POS 308, POS 385, POS 401, POS 453, POS 467, POS 487, POS 488, POS 499

Residency requirement: A minimum of 18 of the 36 POS credits required must be completed at the University of Maine

Contact Information: Mark Brewer, Professor and Acting Chair, 113A Boudreau Hall (207) 581-1863, mark.brewer@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.

For more information about our undergraduate and graduate programs, program learning outcomes, internships, special resources and programs, and research and career opportunities, see our web site at <https://umaine.edu/polisci>.

Information about the Political Science major

Major Requirements:

- POS 100, American Government.
- The 36 credits minimum in POS courses 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.)
- Majors within the department may not receive more than a total of 12 credits toward graduation for any combination of internships and field experience, and not more than 6 credits may be used toward the departmental major. A field supervisor normally participates in the evaluation of an internship or field experience course.

American Politics:

Three credits of an internship or field experience course related to American Politics may be used toward satisfying this sub-field requirement.

- POS 203 - American State and Local Government **Credits: 3**
- POS 282 - Introduction to American Law **Credits: 3**
- POS 304 - American Political Thought **Credits: 3**
(POS 304 may be used as an American Politics OR a Political Theory course)
- 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 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 460 - Seminar in American Politics **Credits: 3**
- POS 484 - The American Constitution and Criminal Due Process **Credits: 3**
- POS 487 - SL: Practicum in Engaged Policy Studies I **Credits: 3**
- POS 488 - SL: Practicum in Engaged Policy Studies II **Credits: 3**

International Relations:

Three credits of an internship or field experience course related to International Relations may be used toward satisfying this sub-field requirement.

- INA 201 - Topics in International Affairs **Credits: 3**
- POS 120 - Introduction to World Politics **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: 3**
- POS 370 - Terrorism **Credits: 3**
- POS 372 - Canadian Foreign Policy **Credits: 3**
- POS 374 - American Foreign Policy **Credits: 3**
- POS 376 - Politics of the Global Economy **Credits: 3**
(POS 376 may be used as an International Relations OR a Comparative Politics course)
- POS 378 - Theories of War and Peace **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 376 - Politics of the Global Economy **Credits:** 3
(POS 376 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 303 - Early Modern Political Thought **Credits:** 3
- POS 304 - American Political Thought **Credits:** 3
(POS 304 may be used as an American Politics OR a Political Theory course)
- 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 308 - Liberalism and its Critics **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)

Internship and Independent Study Courses:

- INT 494 - 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:** 3, 6 or 9
- POS 498 - Independent Study in Political Science **Credits:** 1-3

Capstone Course:

- POS 487 - SL: Practicum in Engaged Policy Studies I **Credits:** 3
And
- POS 488 - SL: 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
- A first year success course Credits: 1

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
- POS Capstone this semester or second semester

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: major: A "C-" or better is required in all Psychology (PSY) Foundations classes (100, 241, and 245) and in the Capstone Experience (PSY 491 or PSY 494, or HON 499).

Other GPA requirements to graduate: Cumulative GPA of 2.0 or better in the courses in the major field that are credited toward the major.

Required Course(s) for fulfilling Capstone Experience and Writing Intensive Requirement within the Major: PSY 491 or 3 credits of PSY 494 with a C- or better or (HON 498 and HON 499) on a topic in psychology and advised by an appropriate psychology faculty member will be accepted as a capstone experience for all students in Psychology. The thesis proposal form must be signed by the chair of the Department of Psychology.

Residency Requirement: A minimum of 18 credits must be taken in the Psychology Department at the University of Maine

Contact Information: Thane Fremouw, Chair, Department of Psychology, 301 Williams Hall, thane.fremouw@maine.edu (207) 581-2033 or Benjamin Guenther, Undergraduate Coordinator, Department of Psychology, 356 Williams Hall, benjamin.guenther@maine.edu (207) 581-2025

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.

For more information about our undergraduate and graduate programs, program learning outcomes, internships, and special resources and programs see our web site at <https://umaine.edu/psychology/>.

Information about the Psychology major

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 addition to the classroom courses, students can take Problems in Psychology (PSY 492), an individualized research experience, 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 (PSY 493) 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.

General requirements for the Bachelor of Arts in Psychology

- A minimum of 35 credits in psychology courses (Note: 60 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.)
- A "C-" or better is required in all Psychology (PSY) foundation classes(100, 241, and 245) and in the Capstone Experience (PSY 491 or PSY 494, or Hon 499).
- Majors must accumulate a minimum grade point average of 2.0 in PSY courses that are credited toward completion of the major.
- No more than six credits of PSY 492: Problems in Psychology, may count toward the 35 credits required.

- No more than three credits of PSY 493: Field Experience may count toward the 35 credits required.
- Students who transfer from other institutions must take a minimum of 18 credits within the department and the department must approve all transfer courses applied to the major.
- All psychology majors must declare one of the following three concentrations: Abnormal/Social, Biological/Cognitive, or Developmental.
- 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 in Clinical Psychology; PSY 424 - Abnormal Child Psychology; PSY 425 - Social Issues in Developmental Psychology; PSY 430 - Current Topics in Social Psychology; PSY 466 Cognitive Neuroscience; PSY 490 - Seminar in Issues in Contemporary Psychology; or any 500-level course

Note: Courses numbered 500-599 are graduate courses that are open to both undergraduate and graduate students. Junior and/or senior psychology majors may enroll in one or more of these courses with permission from the instructor.

A. Foundations (11 credits)

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 (15 credits)

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 466 - Cognitive Neuroscience **Credits: 3**

Developmental:

- PSY 223 - Psychology of Childhood **Credits: 3**
- PSY 224 - Psychology of Adolescence **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 122 - Biology: The Living Science **Credits: 3**

Note that **BIO 100** is a prerequisite for all additional biology courses while **BIO122** is intended for individuals who will not be taking additional biology courses. Although recommended, **BIO 123** (the lab that accompanies BIO 122) 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**¹ (minimum of 3 credit hours)
or
- HON 499 - Honors Thesis/Research II **Credits: 3**²

¹PSY 494 must be a minimum of 3 credit hours

²HON 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.

Romance Languages

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to graduate: 120

Minimum Cumulative GPA required to graduate: 2.0

Minimum number of credits required to complete the major: 30

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

Other GPA requirements to graduate: Cumulative GPA of 2.0 or better in the courses in the major field that are credited toward the major

Required Course(s) for fulfilling Capstone Experience: FRE 495 or SPA 495; HON 498/499 may be used as long as the student uses the languages in which he or she is majoring. The Honors thesis and/or presentation should be done in the language or the majority of the work should be done in the language. The thesis proposal form must be signed by the chair of the Department of Modern Languages and Classics.

Residency requirement: Majors in the College of Liberal Arts & Sciences require a minimum of 15 institutional credits in the major.

Contact Information: Carlos Villacorta, Department Chair, Associate Professor of Spanish, 201 Williams Hall, (207) 581-2072, carlos.villacorta@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.

For more information about our undergraduate and graduate programs, program learning outcomes, internships, special resources and programs, and research and career opportunities, see our web site at <https://umaine.edu/mlandc/>.

Information about the Romance Languages major

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) or completion of Undergraduate Honors Thesis.
4. MLC 210 - Introduction to Modern Languages Credits: 3

Suggested four-year plan for the BA in Romance Languages

First Year - First Semester (15-16 credits)

- ENG 101 - College Composition **Credits:** 3
 - FRE 201 - Intermediate French I **Credits:** 3 - 4 **
 - SPA 203 - Intermediate Spanish I **Credits:** 3
 - Human Values/Social Context Gen Ed.
 - Quantitative Literacy or Science Gen Ed.
- ** Or accelerated language classes at elementary and intermediate levels

First Year - Second Semester (15-16 credits)

- FRE 202 - Intermediate French II **Credits:** 3 - 4 *
 - HTY 105 - History of Ancient and Medieval Europe **Credits:** 3
or
 - HTY 106 - History of Modern Europe **Credits:** 3
 - SPA 204 - Intermediate Spanish II **Credits:** 3
 - Science with Lab Gen Ed
 - Quantitative Literacy Gen Ed
- *All French and Spanish courses satisfy the Cultural Diversity and International Perspectives Gen. Ed. requirements

Second Year -First Semester (15 credits)

- FRE 305 - French Conversation and Composition: Social Issues **Credits:** 3
(WI in major)
- FRE 309 - Readings in French Literature **Credits:** 3
or
- FRE 310 - Readings in Francophone Literature **Credits:** 3
- SPA 305 - Applied Spanish **Credits:** 3
- Course in chosen major
- Ethics Gen Ed

Second Year -Second Semester (16 credits)

- FRE 300X
- MLC 210 - Introduction to Modern Languages **Credits:** 3
- SPA 307 - Readings in Peninsular Literature **Credits:** 3
or
- SPA 308 - Readings in Spanish American Literature **Credits:** 3
- Science Gen Ed.

Third Year - First Semester (15 credits)

- FRE 400X (Cultural Diversity/Int'l Perspectives Gen Ed) (Required for the major)
- SPA 400X (Cultural Diversity/Int'l Perspectives Gen Ed) (Required for the major)

- Population and Environment Gen Ed
- Course in chosen minor
- Elective

Third Year - Second Semester (12-15 credits)

- Semester Abroad (Immersion) - (Highly recommended but not required for major)
or
- 1-2 4xx advanced courses (Cultural Diversity/Int'l Perspectives Gen Ed) (Required for the major)
- Art & Creative Expression (i.e. MUL 101: Art of Listening to Music)
- Course in chosen minor
- Elective

Fourth Year - First Semester (15 credits - 18 if study abroad was 12 credits)

- EHD 466 - The Teaching of Modern Languages **Credits: 3**
- FRE 400X Advanced Lit/Film/Other
- FRE 495 - Senior Project in French **Credits: 0-3**
or
- SPA 495 - Senior Project in Spanish **Credits: 0-3**
- Remaining Gen Ed
- Course in chosen minor

Fourth Year - Second Semester (15 credits)

- EHD 491 - Full-Day Student Teaching (Secondary) **Credits: 1 - 12**
- FRE 495 - Senior Project in French **Credits: 0-3**
or
- SPA 495 - Senior Project in Spanish **Credits: 0-3**
- FRE 400X or SPA 400X
(Advanced Literature/Film/other and/or Senior Project)
- Remaining Gen Ed
- Course in chosen minor

Sociology

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to graduate: 120

Minimum Cumulative GPA required to graduate: 2.0

Minimum number of credits required to complete the major: 33

Minimum Grade requirements for courses to count toward major: At least a "C" in either ENG 201, or ENG 315, or ENG 317; at least a "C-" in a advanced methods course; at least a "C" in each of the Core Requirements except for SOC 101.

Other GPA requirements to graduate: Cumulative GPA of 2.0 or better in the courses in the major field that are credited toward the major.

Required Course(s) for fulfilling Capstone Experience: SOC 499 or three credits of SOC 493 or successful completion of an Honors College thesis

Courses satisfying the writing intensive requirement within the major: SOC 290 and SOC 308

Residency Requirement: At least 15 credits of UM Courses (excluding SOC 101)

Contact Information: Karyn Sporer, Chair, Fernald Hall, Room 201G, 207.581.2361, karyn.sporer@maine.edu

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Core requirements (12 credits): (all core requirements except for SOC 101 must be passed with a "C" or better)

SOC 101 - Introduction to Sociology

SOC 290 - Research Methods in Sociology

SOC 360 - Major Ideas in Sociology

SOC 499 - Senior Capstone

Sociology Electives (15 credits): (At least 6 of the 15 credits must be 300 or 400-level Sociology courses).

SOC majors are allowed to count up to two CRJ courses as electives

Advanced Methods Course (3 credits): (One of the following courses must be passed with a grade of "C- or better)

SOC 219 - Statistical Reasoning in Sociology

SOC 291 - Qualitative Reasoning in Sociology

ANT 448 - Ethnography Through Film

CMJ 402 - Communication Research

PHI 103 - Methods of Reasoning

PSY 241 - Statistics in Psychology

STS 215 Introduction to Statistics for Business and Economics

STS 132 - Principles of Statistical Inference

STS 235 - Introduction to Statistical Methods

STS 434 - Probability Theory

SWK 491 - Methods of Social Work Research

WGS 205 - Introduction to Feminist and Critical Data Analysis

Allowable Advanced Methods Courses on Other UMS Campuses:

USM's SOC 301- Qualitative Research Methods

UMM's ENV 226/326 - Undergraduate Research in Environmental Studies

UMPI's SWK 410 - Social Work Research

UMF's EPP 304 - Environmental GIS

English Proficiency (3 credits): (Not required for Honors Students who complete the Honors Program's four-semester Civilizations sequence.)

All Sociology majors must complete the English Proficiency requirement by the time they graduate. ENG 201 - Strategies for Writing Across Contexts or ENG 315 - Research Writing in the Disciplines or ENG 317 - Business and Technical Writing, fulfill this requirement (with a grade of "C" or better)

Transfer students declaring Sociology must take 15 credits of UM courses (excluding SOC 101 to acquire the BA in Sociology).

Sociology majors who complete an Honors College thesis are not required to take SOC 499-Senior Seminar. If they choose not to take this course, they instead must take a substitute upper-level Sociology elective to ensure that they graduate with at least 27 Sociology credits. This requirement of a substitute course shall take effect for students entering the university Fall 2017.

Required Courses in Suggested Sequence for the B.A. in Sociology

First Year - First Semester 15 Credits

- ENG 101 - College Composition **Credits:** 3
- SOC 101 - Introduction to Sociology **Credits:** 3
- General Education Requirements Credits: 9

First Year - Second Semester 15 Credits

- General Education Requirements Credits: 9
- Electives Credits: 6

Second Year - First Semester 15 Credits

- SOC 2XX Credits: 6
- General Education Requirements Credits: 9

Second Year - Second Semester 15 Credits

- SOC 290 - Research Methods in Sociology **Credits: 3**
- SOC 2XX Credits: 3
- General Education Requirements Credits: 6
- Advanced Methods Course Credits: 3

Third Year - First Semester 15 Credits

- ENG 201 - Strategies for Writing Across Contexts **Credits: 3**
or
- ENG 315 - Research Writing in the Disciplines **Credits: 3**
or
- ENG 317 - Business and Technical Writing **Credits: 3**
- SOC 360 - Major Ideas in Sociology **Credits: 3**
- Electives Credits: 3
- General Education Requirements Credits: 6

Third Year - Second Semester 15 Credits

- SOC 3XX or 4XX Electives Credits: 3
- Electives Credits: 12

Fourth Year - First Semester 15 Credits

- SOC 3XX or 4XX Electives Credits: 3
- Electives Credits: 12

Fourth Year - Second Semester 15 Credits

- SOC 499 - Senior Capstone **Credits: 3**
- Electives Credits: 12

Spanish

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to graduate: 120

Minimum Cumulative GPA required to graduate: 2.0

Minimum number of credits required to complete the major: 36

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

Other GPA requirements to graduate: Cumulative GPA of 2.0 or better in the courses in the major field that are credited toward the major.

Required Course(s) for fulfilling Capstone Experience: SPA 495; HON 498/499 may be used as a capstone course for the language major as long as the student uses the language in which he or she is majoring. The Honors thesis and/or presentation should be done in the language or the majority of the work should be done in the language. The thesis proposal form must be signed by the chair of the Department of Modern Languages and Classics.

Courses satisfying the writing intensive requirement within the major: SPA 305, SPA 306, SPA 307, SPA 309, SPA 414 and SPA 444

Residency requirement: Majors in the College of Liberal Arts & Sciences require a minimum of 15 institutional credits in the major.

Contact Information: Carlos Villacorta, Department Chair, Associate Professor of Spanish, 201 Williams Hall, (207) 581-2072, carlos.villacorta@maine.edu

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Information about the Spanish major

- 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)
- Demonstration of comprehensive coverage of literature and civilization through successful completion of appropriate course work
- A minimum of 36 credit hours, 30 of which must be beyond the intermediate level (300 or higher) and MLC 210.

Special Requirements (9-12 credits):

- MLC 210 - Introduction to Modern Languages **Credits:** 3
- SPA 305 - Applied Spanish **Credits:** 3
or
- SPA 306 - Workshop in Speaking and Writing Spanish **Credits:** 3
- 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 (not required of students for whom Spanish is a secondary major)
- 12 credits of 400-level Spanish courses including at least one language and one literature course from the following course list.
Spanish Courses - Language
- SPA414: History of the Spanish Language
- SPA444: Translation Theory & Techniques
Spanish Courses - Literature
- SPA401: Golden Age
- SPA403: Cervantes
- SPA409: Contemporary Latin-American Short Story
- SPA410: Latin American Novel
- SPA415: Feminism and Literature
- SPA416: Modernism(o) and Avant-Garde
- SPA420: Spanish Film
- SPA490: Topics and Individual Authors in Spanish
- SPA495: Senior Project in Spanish / Capstone
- SPA498: Projects in Spanish II

Highly Recommended:

- HTY 105 - History of Ancient and Medieval Europe **Credits:** 3
- HTY 106 - History of Modern Europe **Credits:** 3

Suggested four-year plan for the B.A. in Spanish (36 credits - 30 above intermediate level):

First Year - First Semester (15-16 credits)

- ENG 101 - College Composition **Credits:** 3
 - SPA 203 - Intermediate Spanish I **Credits:** 3 **
 - Human Values/Social Context Gen. Ed.
 - Quantitative Literacy or Science Gen. Ed.
 - Elective
- ** or accelerated language classes at elementary and intermediate levels
All Spanish courses satisfy the Cultural Diversity and International Perspectives

First Year - Second Semester (15-16 credits)

- HTY 105 - History of Ancient and Medieval Europe **Credits:** 3
or
 - HTY 106 - History of Modern Europe **Credits:** 3
 - SPA 204 - Intermediate Spanish II **Credits:** 3
 - Science Gen. Ed.
 - Ethics Gen. Ed.
 - Elective
- All Spanish courses satisfy the Cultural Diversity and International Perspectives Gen. Ed. requirement

Second Year -First Semester (15 credits)

- SPA 305 - Applied Spanish **Credits: 3**
(WI in major)
- SPA 307 - Readings in Peninsular Literature **Credits: 3**
- MAT Quantitative Literacy Gen. Ed.
- Course in chosen minor
- Elective

Second Year -Second Semester (16 credits)

- MLC 210 - Introduction to Modern Languages **Credits: 3**
- SPA 306 - Workshop in Speaking and Writing Spanish **Credits: 3**
(WI in the major)
or
- SPA 308 - Readings in Spanish American Literature **Credits: 3**
- Human Values & Social Context Gen. Ed.
- Science Gen. Ed.
- Course in chosen minor

Third Year - First Semester (15 credits)

- SPA 4XX Advanced Literature/Film Credits: 1-2 (Cult Div/Intn'l Perspct Gen Ed) (Required for the major)
- Pop & Env Gen Ed
- Course in chosen minor
- Elective
- Elective

Third Year - Second Semester (12-15 Credits)

- Semester Abroad (Immersion) (Highly recommended but not required for the major)
or
- SPA 4XX Advanced courses Credits: 1-2 (Cult Div/Int Persp Gen Ed or Western Cultural Tradition)
- Art & Creative Exp Gen Ed
- Course in chosen minor
- Elective

Fourth Year - First Semester (15 credits)

- EHD 466 - The Teaching of Modern Languages **Credits: 3** (preservice teachers)
or
- Elective
- SPA 495 - Senior Project in Spanish **Credits: 0-3**
- SPA 4XX Advanced Lit/Film/other
- Remaining Gen. Ed.
- Course in chosen minor

Fourth Year - Second Semester (15 credits)

- EHD 491 - Full-Day Student Teaching (Secondary) **Credits:** 1 - 12 (preservice teachers)
or
- Elective
- SPA 495 - Senior Project in Spanish **Credits:** 0-3
- SPA 4XX Advanced Lit/Film/other
- Remaining Gen. Ed.
- Course in chosen minor

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.

Courses satisfying the writing intensive requirement within the major: ART 499

Residency requirement: Majors in the College of Liberal Arts & Sciences require a minimum of 15 institutional credits in the major.

Contact Information: Justin Wolff, Professor & Chair, Department of Art, 107 Lord Hall, (207) 581-3245, justin.wolff@maine.edu

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, and (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)

60 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 Credits: 3
- ART 320 - Sculpture II **Credits: 3**
- ART 340 - Printmaking II **Credits: 3**
- ART 4xx Advanced Studio Elective Credits: 3
- ART 499 - Studio Art Senior Capstone **Credits: 3**

Studio Electives - 9 credits

Select 3 courses (9 credits) from the following:

- ART 330 - Painting II **Credits: 3**
- ART 370 - Digital Art II **Credits: 3**
- ART 420 - Sculpture III **Credits: 3**
- ART 430 - Painting III **Credits: 3**
- ART 440 - Printmaking III **Credits: 3**
- ART XXX Studio Elective Credits: 3
- ART 3XX - 4XX Advanced Studio Elective Credits: 3

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 Credits: 3
- ARH 2xx - 4xx Post 1750 Credits: 3
- ARH 3xx - 4xx Art History Elective Credits: 3

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 BFA requires a portfolio review for admission, which can be done upon application to the university or sometime after the first 2 semesters of classes. If done at the time of application, students may use their Visual and Performing Arts (VAPA) Scholarship portfolios as BFA portfolios. Performance reviews may take place each year for BFA students. The BFA in Studio Art provides the breadth and depth necessary for a liberal-arts based professional degree.

The BFA in Studio Art offers concentrations in the areas of drawing, painting, printmaking, sculpture, digital art, and cross-disciplinary arts. 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

- 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 - 21 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 Credits: 3
- ART 320 - Sculpture II **Credits:** 3
- ART 340 - Printmaking II **Credits:** 3

Studio Electives - 27 credits

Select 9 courses (27 credits) from the following:

- ART XXX - Studio Elective
- ART XXX Studio Elective
- ART 330 - Painting II **Credits:** 3
or
- ART 370 - Digital Art II **Credits:** 3
- ART 360 - Topics in Studio Art **Credits:** 3 (Various approved topics)
or
- ART 460 - Topics in Studio Art **Credits:** 3 (Various approved topics)
- *ART 3xx - 4xx Advanced Studio Elective Credits: 3
- *ART 3xx - 4xx Advanced Studio Elective Credits: 3
- *ART 3xx - 4xx Advanced Studio Elective Credits: 3
- *ART 3xx - 4xx Advanced Studio Elective Credits: 3
- *ART 4xx Advanced Studio Elective Credits: 3
*Check with department for list of electives per semester

Senior Courses - 6 credits

- ART 498 - Directed Study in Studio Art **Credits:** Ar
- ART 499 - Studio Art Senior Capstone **Credits:** 3

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

BFA Area Concentrations

The Bachelor of Fine Arts (BFA) in Studio Art is a professional degree in general fine arts, with choices of concentrations in the areas of Digital Art, Drawing, Painting, Printmaking, Sculpture, and Cross-Disciplinary Arts. Each concentration area consists of 18 credits of upper-level studio courses. The Cross-Disciplinary concentration must be approved by the student's academic advisor, and students will work closely with advisors on choices involving concentration.

There may be a few class options within each concentration area because 1) We do not always offer the same number of topic courses each year and 2) To some extent the arts use a combination of disciplinary perspectives, so the concentration advisor has final choice with the student whether the courses are applicable to the concentration area. These are most likely, but not exclusively, to be found in the areas of drawing and digital art.

BFA Area of Concentration: Digital Art

- ART 270 - Digital Art I Credits: 3
 - ART 360 - Topics in Studio Art Credits: 3 (Topics in Digital Art)
 - ART 370 - Digital Art II Credits: 3
 - ART 460 - Topics in Studio Art Credits: 3 (Topics in Digital Art)
 - ART 498 - Directed Study in Studio Art Credits: Ar (Senior Project in Digital Art)
-
- ART 460 - Topics in Studio Art Credits: 3 (Topics in Digital Art)
- or
- ART 397 - Independent Study in Studio Art Credits: Ar (Independent Study in Digital Art)
- or
- ART 497 - Independent Study in Studio Art Credits: Ar (Independent Study in Digital Art)

BFA Area of Concentration: Drawing

- ART 200 - Drawing II Credits: 3
 - ART 360 - Topics in Studio Art Credits: 3 (Topics in Drawing)
 - ART 460 - Topics in Studio Art Credits: 3 (Topics in Drawing)
 - ART 460 - Topics in Studio Art Credits: 3 (Topics in Drawing)
 - ART 498 - Directed Study in Studio Art Credits: Ar (Senior Project in Drawing)
-
- ART 397 - Independent Study in Studio Art Credits: Ar (Independent Study in Drawing)
- or
- ART 497 - Independent Study in Studio Art Credits: Ar (Independent Study in Drawing)

BFA Area of Concentration: Painting

- ART 230 - Painting I Credits: 3
 - ART 330 - Painting II Credits: 3
 - ART 430 - Painting III Credits: 3
 - ART 430 - Painting III Credits: 3
 - ART 498 - Directed Study in Studio Art Credits: Ar (Senior Project in Painting)
-
- ART 360 - Topics in Studio Art Credits: 3 (Topics in Painting)
- or
- ART 460 - Topics in Studio Art Credits: 3 (Topics in Painting)
- or

- ART 430 - Painting III Credits: 3
or
- ART 497 - Independent Study in Studio Art Credits: Ar (Independent Study in Painting)

BFA Area of Concentration: Printmaking

- ART 240 - Printmaking I Credits: 3
 - ART 340 - Printmaking II Credits: 3
 - ART 440 - Printmaking III Credits: 3
 - ART 440 - Printmaking III Credits: 3
 - ART 498 - Directed Study in Studio Art Credits: Ar (Senior Project in Printmaking)
-
- ART 360 - Topics in Studio Art Credits: 3 (Topics in Printmaking)
or
 - ART 460 - Topics in Studio Art Credits: 3 (Topics in Printmaking)
or
 - ART 440 - Printmaking III Credits: 3
or
 - ART 397 - Independent Study in Studio Art Credits: Ar (Independent Study in Printmaking)
or
 - ART 497 - Independent Study in Studio Art Credits: Ar (Independent Study in Printmaking)

BFA Area of Concentration: Sculpture

- ART 220 - Sculpture I Credits: 3
 - ART 320 - Sculpture II Credits: 3
 - ART 420 - Sculpture III Credits: 3
 - ART 420 - Sculpture III Credits: 3
 - ART 498 - Directed Study in Studio Art Credits: Ar (Senior Project in Sculpture)
-
- ART 420 - Sculpture III Credits: 3
or
 - ART 360 - Topics in Studio Art Credits: 3 (Topics in Sculpture)
or
 - ART 460 - Topics in Studio Art Credits: 3 (Topics in Sculpture)
or
 - ART 397 - Independent Study in Studio Art Credits: Ar (Independent Study in Sculpture)
or
 - ART 497 - Independent Study in Studio Art Credits: Ar (Independent Study in Sculpture)

BFA Area of Concentration: Cross-Disciplinary

The Cross-Disciplinary concentration must be approved by the student's academic advisor, and students will work closely with advisors on choices involving concentration.

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 3-4XX
- ART 3-4XX
- ART 3-4XX
- ART 3-4XX
- ART 3-4XX

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 number of credits required to complete the major: 47

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: Cumulative GPA of 2.0 or better in the courses in the major field that are credited toward the major.

Required Course(s) for fulfilling Capstone Experience: THE 415; HON 498/499 on a topic in theatre and advised by a faculty member in the Division may be substituted for THE 415. The thesis proposal form must be signed by the chair of the Division of Theatre/Dance.

Residency requirement: Majors in the College of Liberal Arts & Sciences require a minimum of 15 institutional credits in the major.

Contact Information: Philip Edelman, Associate Professor, Director of the School of Performing Arts, Class of 1944 Hall, Room 208, 207.581.1257, philip.edelman@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.

For more information about our undergraduate and graduate programs, program learning outcomes, internships, special resources and programs, and research and career opportunities, see our web site at <https://umaine.edu/spa/>.

Information about the Theatre major

Core Curriculum - 29 credits

- THE 112 - Dramatic Literature **Credits:** 3
- THE 117 - Fundamentals of Acting **Credits:** 3
- THE 120 - Fundamentals of Stagecraft **Credits:** 3
- THE 121 - Stagecraft Laboratory **Credits:** 1
- THE 200 - Fundamentals of Design **Credits:** 3
- THE 212 - Script Analysis **Credits:** 3
- THE 216 - Fundamentals of Directing **Credits:** 3
- THE 360 - Global Theatre History **Credits:** 3
- THE 415 - Capstone Experience in Theatre **Credits:** 3
- THE 416 - Theatre Capstone Project **Credits:** 1
- THE 460 - Topics in Global Theatre **Credits:** 3

Practicum - 6 credits of practicum

At least 2 credits must be THP 103

- THP 101 - Theatre Practicum, Acting **Credits:** 0-3
- THP 102 - Theatre Practicum, Design **Credits:** 0-3
- THP 103 - Theatre Practicum, Technical **Credits:** 0-3
- THP 104 - Theatre Practicum, Directing **Credits:** 0-3
- THP 105 - Theatre Practicum, Dramaturgy/Playwriting **Credits:** 0-3

Theatre Electives - 12 credits

Any THE course with the exception of THE 111 - Introduction to Theatre

Suggested four-year plan for the BA in Theater

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 - Fundamentals of Stagecraft **Credits:** 3
- THE 121 - Stagecraft Laboratory **Credits:** 1
- General Education Requirement: Quantitative Literacy Credits: 3
- College Requirement Credits: 3

First Year - Second Semester - 16 Credits

- THE 112 - Dramatic Literature **Credits:** 3
- THE 200 - Fundamentals of Design **Credits:** 3
- General Education Requirement: Science with Lab Credits: 4
- College Requirement Credits: 3
- General Education Requirement: Quantitative Literacy Credits: 3

Second Year - First Semester - 15 Credits

- THE 212 - Script Analysis **Credits:** 3
- THE 216 - Fundamentals of Directing **Credits:** 3
- General Education Requirement: Social Contexts and Institutions Credits: 3
- College Requirement Credits: 3
- College Requirement Credits: 3

Second Year - Second Semester - 14 Credits

- THE 360 - Global Theatre History Credits: 3
(Cultural Diversity and International Perspective & Writing Intensive)
- Gen Ed: Population and the Environment Credits 3

- Gen Ed: Science Credits: 3
- College Requirement Credits 3
- THP 103 - Theatre Practicum, Technical Credits: 0-3

Third Year - First Semester - 14 Credits

- THE 460 - Topics in Global Theatre **Credits:** 3 (Cultural Diversity and International Perspective & Writing Intensive)
- THP 101 - Theatre Practicum, Acting **Credits:** 0-3
- THP 102 - Theatre Practicum, Design **Credits:** 0-3
- THP 103 - Theatre Practicum, Technical **Credits:** 0-3
- THP 104 - Theatre Practicum, Directing **Credits:** 0-3
- THP 105 - Theatre Practicum, Dramaturgy/Playwriting **Credits:** 0-3
- Theatre Elective Credits: 3
- College Requirement or Elective Credits: 3
- General Education Requirement: Ethics Credits: 3

Third Year - Second Semester - 14 Credits

- THP 101 - Theatre Practicum, Acting **Credits:** 0-3
- THP 102 - Theatre Practicum, Design **Credits:** 0-3
- THP 103 - Theatre Practicum, Technical **Credits:** 0-3
- THP 104 - Theatre Practicum, Directing **Credits:** 0-3
- THP 105 - Theatre Practicum, Dramaturgy/Playwriting **Credits:** 0-3
- Theatre Elective Credits: 3
- College Requirement or Elective Credits: 3
- College Requirement or Elective Credits: 3
- College Requirement or Elective Credits: 3

Fourth Year - First Semester - 15 Credits

- THE 415 - Capstone Experience in Theatre **Credits:** 3
- Theatre Course Credits: 3
- College Requirement Credits: 3
- College Requirement Credits: 3
- College Requirement Credits: 3

Fourth Year - Second Semester - 16 Credits

- THE 416 - Theatre Capstone Project Credits: 1
- Theatre Elective Credits: 3
- College Requirement or Elective Credits: 3
- College Requirement or Elective Credits: 3
- College Requirement or Elective Credits: 3
- College Requirement or Elective Credits: 3

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.

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.

Elective Credits in this four-year plan may be applied to the College of Liberal Arts and Sciences 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 410 or WGS 411 to be taken with WGS 499

Courses satisfying the writing intensive requirement within the major: WGS 410

Residency requirement: Majors in the College of Liberal Arts & Sciences require a minimum of 15 institutional credits in the major.

Contact Information: Elizabeth Neiman, Director, 422 Chadbourne. Hall, 207.581.3439, elizabeth.neiman@maine.edu

The Bachelor of Arts in Women's, Gender, and Sexuality (WGS) Studies is an interdisciplinary program with faculty from a variety of academic units on campus. Students who major in WGS are employed in law, education, business, social services, health services, and government at all levels. WGS is also an excellent second major or minor for students majoring in a wide variety of disciplines, such as anthropology, English, history, nursing, political science, psychology, social work, and sociology. Students can also major in International Affairs with a concentration in Global Women's, Gender, and Sexuality Issues.

WGS majors will gain a more complete understanding of how the social construction of gender has influenced the roles, contributions, and experiences of all individuals. This understanding is coupled with a complex understanding of how gender and sexuality interact with race, social class, dis/ability, nationality, ethnicity, and other sites of social inequality.

The requirements listed on this page are specific to this particular major. Students are also responsible for meeting any graduation requirements set 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.

The major consists of 33 credits, with 18 credits in the core curriculum and 15 credits of electives chosen from a broad list of possible course options (of which at least 6 credits need to be at the 300 or 400 level).

Required Courses (18 credits):

- WGS 101 - Introduction to Women's, Gender, and Sexuality Studies **Credits:** 3
 - WGS 103 - Introduction to Lesbian, Gay, Bisexual, Transgender, and Queer Studies **Credits:** 3
 - WGS 280 - Intersectionality and Social Movements **Credits:** 3
 - or
 - WGS 206 - Investigating Equity **Credits:** 3
 - WGS 410 - Feminist, Gender and Queer Theory **Credits:** 3 *
 - WGS 411 - Internship in Women's, Gender, and Sexuality Studies **Credits:** 3 *
 - WGS 499 - Capstone **Credits:** 0 *
- Plus any One of the following courses:
- WGS 303 - Social Movements, Media and Change **Credits:** 3

- WGS 340 - Transnational Feminisms **Credits: 3**
- WGS 351 - Authorizing Women's Sexualities **Credits: 3**
- WGS 371 - Border-crossing: Gendered Perspectives on Modern Migration **Credits: 3**

*Capstone requirement: WGS 410 or WGS 411 to be taken with WGS 499

Electives Courses (15 credits of which 6 credits must be taken at the 300 or 400 level):

WGS Course Electives:

- WGS 201 - Topics in Women's, Gender, and Sexuality Studies **Credits: 3**
- WGS 203 - Men and Masculinities **Credits: 3**
- WGS 205 - Introduction to Feminist and Critical Data Analysis **Credits: 3**
- WGS 206 - Investigating Equity **Credits: 3**
- WGS 230 - Women, Health, and the Environment **Credits: 3**
- WGS 250 - Women and Music **Credits: 3**
- WGS 260 - Gardening as Social Justice **Credits: 3**
- WGS 270 - Gender in Native American Cultures **Credits: 3**
- WGS 280 - Intersectionality and Social Movements **Credits: 3**
- WGS 301 - Intermediate Topics in Women's, Gender, and Sexuality Studies **Credits: 3**
- WGS 303 - Social Movements, Media and Change **Credits: 3**
- WGS 340 - Transnational Feminisms **Credits: 3**
- WGS 351 - Authorizing Women's Sexualities **Credits: 3**
- WGS 360 - Gender and Cinema **Credits: 3**
- WGS 371 - Border-crossing: Gendered Perspectives on Modern Migration **Credits: 3**
- WGS 401 - Advanced Topics in Women's, Gender, and Sexuality Studies **Credits: 3**

Approved Course Electives:

- ANT 245 - Sex and Gender in Cross-Cultural Perspective **Credits: 3**
- CHF 351 - Human Sexuality **Credits: 3**
- CHF 451 - Family Relationships **Credits: 3**
- CHF 452 - Violence in the Family **Credits: 3**
- CMJ 420 - SL: Health Communication **Credits: 3**
- CRJ 301 - Gender and Crime **Credits: 3**
- CRJ 302 - Race and Crime **Credits: 3**
- CRJ 324 - Domestic Violence **Credits: 3**
- DIS 300 - Disability: Interaction of Human Diversity and Global Environment **Credits: 3**
- DIS 400 - Disability as Diversity I **Credits: 3**
- DIS 450 - Disability: Population-Environment Diversity **Credits: 3**
- ECO 180 - Citizens, Energy & Sustainability **Credits: 3**
- ENG 470 - Topics in Literary Theory and Criticism **Credits: 3**
- MES 350 - Maine Women **Credits: 3**
- MUE 401 - Organization and Administration of Secondary Music Performance Programs **Credits: 3**
- NMD 200 - Designing Humane Tech **Credits: 3**
- NUR 300 - Health Assessment Through the Lifespan **Credits: 3** (for Nursing majors only)
- NUR 413 - Nursing Care Management of Women, Infants and Families **Credits: 3** (for Nursing majors only)
- NUR 452 - Community and Population Health **Credits: 3** (for Nursing majors only)
- SOC 310 - Food Systems and Social Change **Credits: 3**

- SOC 324 - Domestic Violence **Credits: 3**
- SOC 340 - Intermediate Topics in Sociology **Credits: 3**
- SWK 330 - Contemporary Issues in Diversity and Pluralism **Credits: 3**
- SWK 380 - The Biological Person and the Environment **Credits: 3**
- SWK 497 - Special Topics in Social Work **Credits: 1-3**
- SPA 415 - Feminism and Literature **Credits: 3** (taught in Spanish)

Minor

Minor: Anthropology

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to earn minor: 18

GPA requirements to earn minor: Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.

Minimum Grade requirements for courses to count toward minor: A C- or higher is required in ANT 101 and ANT 102.

Other requirements: A minimum of 9 credit hours must be completed at the University of Maine. A minimum of 9 credit hours must be at the 200-level or above.

Contact Information: Samuel Hanes, Chair, Associate Professor of Anthropology, 5773 S. Stevens Hall, (207) 581-1885, Fax: (207) 581-1823, samuel.hanes@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 Grade requirements for courses to count toward minor: Students minoring in Archaeology must pass ANT 101, ANT 102, and ANT 317 with at least a C- grade.

GPA requirements to earn minor: Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.

Other requirements: A minimum of 9 credit hours that include ANT 317 must be completed at the University of Maine.

Contact Information: Samuel Hanes, Chair, Associate Professor of Anthropology, 5773 S. Stevens Hall, (207) 581-1885, Fax: (207) 581-1823, samuel.hanes@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 Courses: A minimum of 9 credit hours must be at the 200-level or above.

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 207 - Introduction to World Archaeology **Credits:** 3
- ANT 210 - Biological Anthropology **Credits:** 3
- ANT 240 - Hollywood Archaeology **Credits:** 3
- ANT 260 - Forensic Anthropology **Credits:** 3
- ANT 285 - Introduction to Historic Preservation **Credits:** 3
- ANT 350 - Mediterranean Ancient Landscapes Modern World **Credits:** 3
- ANT 372 - North American Prehistory **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 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), 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: Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.

Minimum Grade requirements for courses to count toward minor: C- or better in all ART & ARH required courses taken.

Other requirements: A minimum of 9 credit hours must be completed at the University of Maine.

Contact Information: Justin Wolff, Professor & Chair, Department of Art, 107 Lord Hall, (207) 581-3245, justin.wolff@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: Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.

Other requirements: A minimum of 9 credit hours must be completed at the University of Maine.

Contact Information: David Batuski, Department of Physics, Room 312 Bennett Hall, (207) 581-1039, batuski@maine.edu

A minor in astronomy is a flexible program intended for students enrolled in any four-year degree at the University of Maine. It requires a minimum of 21 credits and nine of those credits must be taken at the University of Maine.

Required Courses

The Department Chairperson may consider exceptions to this list on a case-by-case basis.

- AST 109 - Introduction to Astronomy **Credits: 3**
- AST 110 - Introduction to Astronomy Laboratory **Credits: 1**
- 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**

Elective Courses

Select three or more courses from the following list. The credits must total to 8 or more.

- AST 221 - Planetary Systems **Credits: 3**
- AST 227 - Stars and Galaxies **Credits: 3**
- AST 451 - Astrophysics **Credits: 1-3**
(See Footnote 1)
- AST 497 - Topics in Astrophysics **Credits: 1-3**
(See Footnote 1)
- PHY 236 - Introductory Quantum Physics **Credits: 3**
†These courses may be taken for 1-3 credits, as arranged.

Exceptions to this list may be considered on a case-by-case basis by the Minor Advisor with the advice and consent of the faculty.

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 count toward the minor.

Minimum Grade requirements for courses to count toward minor: C

Other requirements: A minimum of 9 credit hours must be completed at the University of Maine.

Contact Information: Frederic Rondeau, Associate Professor, Director of Canadian American Center, 154 College Avenue, 20.581.4020, frederic.rondeau@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. 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, English, Franco American Studies, Geography, Geology, 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. 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

- CAN 101 - Introduction to Canadian Studies **Credits: 3**
- CAN 401 - Readings in Canadian Studies **Credits: 3**
- CAN 499 - Internship-Canadian Studies **Credits: 1-3**
- ECO 340 - The Canadian Economy: Issues and Policies **Credits: 3**
- ENG 236 - Intro to Canadian Literature **Credits: 3**
- ENG 336 - Canadian Literature **Credits: 3**
- FRE 309 - Readings in French 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**
(Canadian related topics only)
- FRE 495 - Senior Project in French **Credits: 0-3**
(Canadian related topics only)
- HTY 459 - Colonial Canada **Credits: 3**
- HTY 460 - Modern Canada **Credits: 3**
- MGT 328 - Canadian/U.S. Business: A Comparison **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: 3, 6 or 9**

Canadian Related Courses

- ANT 221 - Introduction to Folklore **Credits: 3**
- ANT 372 - North American Prehistory **Credits: 3**

- ANT 426 - Native American Folklore **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 Media **Credits:** 3
- FAS 101 - Introduction to the French cultures of North America **Credits:** 3
- FAS 120 - People, Places and Pasts **Credits:** 3
- FAS 240 - French Exploration and Settlement of Maine, 1604-1760 **Credits:** 3
- FAS 329 - Topics in Franco American Studies **Credits:** 3
- FRE 101 - Elementary French I **Credits:** 3 - 4
- FRE 102 - Elementary French II **Credits:** 3 - 4
- FRE 201 - Intermediate French I **Credits:** 3 - 4
- FRE 202 - Intermediate French II **Credits:** 3 - 4
- FRE 305 - French Conversation and Composition: Social Issues **Credits:** 3
- FRE 306 - French Conversation and Composition: Global Issues **Credits:** 3
- FRE 310 - Readings in Francophone Literature **Credits:** 3
- FRE 315 - Advanced French Conversation **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 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:** 1-3
- HTY 481 - Amerindians of the Northeast: A 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

Minor: Chemistry

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to earn minor: 23

GPA requirements to earn minor: Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.

Minimum Grade requirements for courses to count toward minor: Chemistry minors must earn a C- or better.

Other requirements: A minimum of 14 credit hours must be completed at the University of Maine.

Contact Information: Alice E. Bruce, Professor and Chair, 5706 Aubert Hall, Room 154, (207) 581-1168, abruce@maine.edu

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. The 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 400 level CHY course. At least 14 credits must be taken at the University of Maine.

A 500 level chemistry course can be substituted to fulfill the minor requirement by obtaining permission from the course instructor and academic advisor. Students will still need a minimum of 23 credits if a substitution occurs. No grade below a C- will be accepted toward these requirements.

Courses:

- CHY 121 - General Chemistry I **Credits:** 3
- CHY 122 - General Chemistry II **Credits:** 3
- CHY 123 - General Chemistry Laboratory I **Credits:** 1
- CHY 124 - General Chemistry Laboratory II **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
- CHY 261 - Introduction to Inorganic Chemistry **Credits:** 3
- CHY 423 - Introductory Polymer Chemistry **Credits:** 3
- CHY 431 - Structure and Mechanism in Biological Chemistry **Credits:** 3
- CHY 443 - Instrumental Analysis **Credits:** 3
- 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: Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.

Minimum Grade requirements for courses to count toward minor: None.

Other requirements: A minimum of 9 credit hours must be completed at the University of Maine.

Contact Information: Carlos Villacorta, Chair, Associate Professor of Spanish, 201 Williams Hall, (207) 581-2072, carlos.villacorta@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 Williams Hall, (207)581-2072.

Art History

- ARH 155 - Art and Visual Culture in the Ancient and Medieval Worlds **Credits: 3**

Classics

- CLA 101 - Greek Literature in English Translation **Credits: 3**
- CLA 102 - Latin Literature in English Translation **Credits: 3**
- CLA 202 - Mythology of the Ancient Near East, North Africa and Greece **Credits: 3**
- CLA 400 - Hero: Myth and Meaning **Credits: 3**

English

History

- HTY 105 - History of Ancient and Medieval Europe **Credits: 3**
- HTY 402 - Roman History **Credits: 3**

Modern Language

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: 19-23

GPA requirements to earn minor: Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.

Minimum Grade requirements for courses to count toward minor: A "C" or higher in COS 125, COS 140 and COS 225

Other requirements: A minimum of 19 credit hours must be completed at the University of Maine.

Contact Information: Roy Turner and Christopher Dufour, Undergraduate Coordinators, School of Computing and Information Science, (207) 581-3909 and (207) 581-2951, rturner@maine.edu, christopher.dufour@maine.edu

A minor in Computer Science requires at least 19-23 credit hours of COS courses taken within the COS department at the University of Maine. The Computer Science minor will take at least two years to complete.

Computer Science - Minor Requirements - Option 1 (19 credits)

- * COS 125 - Introduction to Problem Solving Using Computer Programming **Credits:** 4
 - * COS 140 - Foundations of Computer Science **Credits:** 3
 - * COS 225 - Object-Oriented Design, Programming and Data Structures **Credits:** 3
 - COS 226 - Introduction to Data Structures and Algorithms **Credits:** 3
 - Plus any two additional COS courses at the 300-level or above
- *Courses must be completed with a grade of "C" or better in each; a grade of "C-" (C minus) is not sufficient.

Computer Science - Minor Requirements - Option 2 (23 credits)

- * COS 125 - Introduction to Problem Solving Using Computer Programming **Credits:** 4
 - COS 135 - Applied C Programming **Credits:** 3
 - * COS 140 - Foundations of Computer Science **Credits:** 3
 - * COS 225 - Object-Oriented Design, Programming and Data Structures **Credits:** 3
 - COS 226 - Introduction to Data Structures and Algorithms **Credits:** 3
 - COS 235 - Computer Architecture **Credits:** 3
 - COS 250 - Discrete Structures **Credits:** 4
- *Courses must be completed with a grade of "C" or better; a grade of "C-" (C minus) is not sufficient.

Minor: Creative Writing

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to earn minor: 18

GPA requirements to earn a minor: Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.

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: Gregory Howard, Associate Professor and Director of Creative Writing, 303 Neville Hall, (207) 581-3838, gregory.e.howard@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: Criminal Justice

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to earn minor: 18

GPA requirements to earn minor: Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.

Minimum Grade requirements for courses to count toward minor: No courses for the Criminal Justice minor may be taken pass/fail.

Other requirements: A minimum of 9 credit hours must be completed at the University of Maine.

Contact Information: Karyn Sporer, Chair, Department of Sociology, Fernald Hall, Room 201G, 207.581.2361, karyn.sporer@maine.edu

Required Courses:

- CRJ 114 - Survey of Criminal Justice **Credits: 3**
- CRJ 214 - Introduction to Criminology **Credits: 3**

Category 1: Fundamentals of Crime, Law, and the Justice System

Two of the following (6 credits, 3 credits must be CRJ)

- CRJ 219 - Police and Society **Credits: 3**
- CRJ 220 - Corrections **Credits: 3**
- CRJ 314 - Law and Society **Credits: 3**
- POS 282 - Introduction to American Law **Credits: 3**
- 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**

Category 2: Advanced Topics in Criminology

One of the following (6 credits, 3 credits must be SOC or CRJ)

- CRJ 308 - Problems of Violence and Terrorism **Credits: 3**
or
- SOC 308 - Problems of Violence and Terrorism **Credits: 3**
- CRJ 240 - Topics in Criminal Justice **Credits: 1-3**
- CRJ 301 - Gender and Crime **Credits: 3**
- CRJ 302 - Race and Crime **Credits: 3**
- CRJ 324 - Domestic Violence **Credits: 3**
or
- SOC 324 - Domestic Violence **Credits: 3**
- CRJ 340 - Intermediate Topics in Criminal Justice **Credits: 1-3**
- PSY 208 - Theories of Personality **Credits: 3**
- PSY 212 - Abnormal Psychology **Credits: 3**
- POS 370 - Terrorism **Credits: 3**
- SOC 220 - Sociology of Deviance **Credits: 3**

Minor: Dance

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to earn minor: 18

GPA requirements to earn minor: Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.

Minimum Grade requirements for courses to count toward minor: None.

Other requirements: A minimum of 9 credit hours must be completed at the University of Maine.

Contact Information: Philip Edelman, Associate Professor, Director of the School of Performing Arts, Class of 1944 Hall, Room 208, 207.581.1257, philip.edelman@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.

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 205 - Intermediate Tap **Credits:** 2
- DAN 206 - Beginner Hip Hop **Credits:** 2
- DAN 297 - Introductory Topics in Dance **Credits:** 2
- MUO 111 - Marching Band **Credits:** 0-1

Every minor must take 3 credits of either course:

- DAN 250 - Dance Composition I **Credits:** 3
- or

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: Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.

Minimum Grade requirements for courses to count toward minor: A "C-" or better is required in all English Minor courses.

Other requirements: A minimum of 12 credit hours must be completed at the University of Maine.

Contact Information: Steven Evans, Associate Professor, Department Chair, Department of English, 304 Neville Hall, 207.581.3822, steven.evans@maine.edu

18 credits of English courses are required, **excluding ENG 100 and ENG 101.**

Required Courses:

Six courses:

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**

AND Two 300-level literature courses (6 credits)

AND Any two* writing or literature courses at the 200, 300, or 400 level (6 credits)

*these additional courses can be writing and/or literature courses, in any combination

Minor: Environmental Ethics

OVERVIEW OF MINOR 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-

Other requirements: A minimum of 9 credit hours of the minor must be completed at the University of Maine.

Contact Information: Donald Beith, Department of Philosophy, 13 Maples, donald.beith@maine.edu, 207-581-3887

The Environmental Ethics minor is an interdisciplinary minor that combines focused courses in ethical reasoning about the environment, the philosophy of nature and environmental justice. It features a wide range of electives from across disciplines that specialize in the study of environmental values. In a world facing increasing challenges from climate change, this minor aims to provide students with ethical frameworks, multi-cultural awareness and a philosophical grasp of environmental justice issues pertaining to the Penobscot River, the state of Maine and beyond. Featuring a concentration in ethical and ecological thought, this minor should appeal to students in the humanities, sciences and other fields.

Environmental Ethics Requirement (6 credits)

- PHI 132 - Life, Technology and Evolution **Credits: 3**
- PHI 232 - Environmental Ethics **Credits: 3**
- PHI 332 - Environmental Philosophy **Credits: 3**
- PHI 432 - Environmental Justice **Credits: 3**

Ethical Theory Requirement (3 credits)

- PHI 100 - Contemporary Moral Problems **Credits: 3**
- PHI 221 - Classical Chinese Philosophy **Credits: 3**
- PHI 230 - Ethics **Credits: 3**
- PHI 232 - Environmental Ethics **Credits: 3**
- PHI 235 - Biomedical Ethics **Credits: 3**
- PHI 240 - Social and Political Philosophy **Credits: 3**
- PHI 244 - Philosophy of Law **Credits: 3**
- PHI 344 - Theories of Justice **Credits: 3**
- PHI 345 - Global Justice **Credits: 3**

Environmental Studies Electives (9 credits)

- 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 270 - Environmental Justice Movements in the United States **Credits: 3**
- ANT 451 - Native American Cultures and Identities **Credits: 3**
- ANT 464 - Ecological Anthropology **Credits: 3**
- BIO 122 - Biology: The Living Science **Credits: 3**
- CIE 210 - Sustainability in Engineering **Credits: 3**
- CMJ 107 - Communication and the Environment **Credits: 3**
- CMJ 407 - SL -Environmental Communication **Credits: 3**
- ECO 190 - World Food Supply, Population and the Environment **Credits: 3**
- ECO 381 - SL: Sustainability Science, Policy, and Action **Credits: 3**
- EES 324 - Environmental Protection Law and Policy **Credits: 3**
- ENG 238 - Nature and Literature **Credits: 3**
- ERS 121 - Humans and Global Change **Credits: 3**
- FSN 270 - World Food and Culture **Credits: 3**
- GEO 311 - Geography of Climate Change **Credits: 3**
- HTY 211 - Maine and the Sea **Credits: 3**
- HTY 213 - History of the Maine Woods **Credits: 3**
- HTY 275 - Geography of Globalization **Credits: 3**
- HTY 480 - Global Environmental History **Credits: 3**
- MES 201 - The Maine Coast **Credits: 3**
- MES 301 - Rachel Carson, Maine, and the Environment **Credits: 3**
- NAS 295 - American Indians and Climate Change **Credits: 3**
- PAX 351 - This Sacred Earth: Ecology and Spirituality **Credits: 3**
- PHI 132 - Life, Technology and Evolution **Credits: 3 ***
- PHI 232 - Environmental Ethics **Credits: 3 ***
- PHI 332 - Environmental Philosophy **Credits: 3 ***
- PHI 432 - Environmental Justice **Credits: 3 ***
- PSE 121 - Human Societies, Soil and Water: The Unbreakable Link **Credits: 3**
- SFR 220 - Environment and Society **Credits: 3**
- WGS 230 - Women, Health, and the Environment **Credits: 3**

Appendix

1. *A student can take up to the additional two environmental philosophy courses, and have them counted toward the "Environmental Studies Electives". These courses will first be counted toward the "Environmental Ethics Requirement."
2. Selected topics courses that cover environmental humanities, ethics and policy can count toward the requirements of this minor, on a case by case basis. Students should consult with the campus advisor for the Environmental Ethics Minor to determine if a particular course not listed above can be counted toward the minor.

Minor: Ethics and Political Philosophy

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to earn minor: 18

GPA requirements to earn minor: Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.

Minimum Grade requirements for courses to count toward minor: A grade of C- or better is required in any Philosophy courses counting towards minor.

Other requirements: A minimum of 9 credit hours must be completed at the University of Maine.

Contact Information: Kirsten Jacobson, Chair, Department of Philosophy, 5776 The Maples, (207) 581-3848, kirsten.jacobson@maine.edu

A minor in Ethics and Political Philosophy shall consist of at least 18 credits with a minimum course grade of C-. Students enrolled in this minor must satisfy the following requirements:

Core Requirements (6 credits)

- PHI 100 - Contemporary Moral Problems **Credits:** 3
or
- PHI 230 - Ethics **Credits:** 3
- PHI 240 - Social and Political Philosophy **Credits:** 3

At least three courses from the following list (9 credits)

- PHI 100 - Contemporary Moral Problems **Credits:** 3
- PHI 102 - Introduction to Philosophy **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 221 - Classical Chinese Philosophy **Credits:** 3
- PHI 230 - Ethics **Credits:** 3
- PHI 231 - Topics in Applied Ethics **Credits:** 3
- PHI 232 - Environmental 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 242 - Ethics in Professional Life **Credits:** 3
- PHI 244 - Philosophy of Law **Credits:** 3
- PHI 287 - Buddhist Philosophy **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 Justice **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: Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.

Minimum Grade requirements for courses to count toward minor: C-

Other requirements: A minimum of 9 credit hours must be completed at the University of Maine.

Contact Information: Michael Grillo, Department of Art, 219 Lord Hall, 581-3252; grillo@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, Communication and Journalism, English, History, Modern Language and Classics, New Media, Political Science, and Women's, Gender, and Sexuality Studies.

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, these courses also count for 3 credits of the History and Theory requirement)

- CMJ 245 - Film Criticism and Theory **Credits:** 3
- ENG 280 - Introduction to Film **Credits:** 3
- HTY 218 - History of Film **Credits:** 3
- NMD 245 - Film Criticism and Theory **Credits:** 3

Two or more History and Theory (minimum of 6 credits, including any one of the four History and Theory Introductory courses)

- ANT 448 - Ethnography Through Film **Credits: 3**
- ARH 369 - Film and Video Theory Seminar **Credits: 3**
- CMJ 370 - Visual Communication **Credits: 3**
- CMJ 398 - Topics in Media Studies **Credits: 3**
- ENG 249 - American Sports Literature and Film **Credits: 3**
- FRE 390 - Topics in French **Credits: 1-3**
- FRE 430 - French Film Survey **Credits: 3**
- NMD 358 - Documentary Film Criticism and Theory **Credits: 3**
- POS 357 - Film and Politics **Credits: 3**
- SPA 420 - Spanish Film **Credits: 3**
- WGS 360 - Gender and Cinema **Credits: 3**

Two or more Practice courses (minimum of 6 credits)

- CMJ 351 - Audio and Video Production **Credits: 4**
- NMD 106 - Time-Based Media **Credits: 3**
- NMD 324 - Introduction to Narrative Film Making **Credits: 3**
- NMD 343 - SL: Digital Narrative Workshop I **Credits: 3**
- NMD 344 - Motion Graphics & Design I **Credits: 3**
- NMD 370 - 3D Modeling and Animation **Credits: 3**
- NMD 424 - Narrative Film Making **Credits: 3**
- NMD 430 - Topics in New Media **Credits: 1-3**
- NMD 441 - Documentary Video and Storytelling **Credits: 3**
- NMD 443 - Digital Narrative Workshop II **Credits: 3**
- NMD 444 - Motion Graphics & Design II **Credits: 3**

*Special topics and Capstone courses will be considered for the minor by request when these courses are centered on film and video.

Minor: Folklore and Traditional Arts

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to earn minor: 18

GPA requirements to earn minor: Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.

Minimum Grade requirements for courses to count toward minor: C-

Other requirements: A minimum of 9 credit hours must be completed at the University of Maine.

Contact Information: Sam Hanes, Associate Professor, Chair, Department of Anthropology, 5773 South Stevens Hall, 207.581.1885, samuel.hanes@maine.edu

Folklore encompasses a vast range of human stories and information transmitted through traditional means, including folktales, myths and epics; ballads, folk songs and other musical forms; traditional dance, theatre and other performance; and folk art and decorative arts, as well as belief systems connected to these forms. The study of folklore draws upon theories and methods from several fields while also having its own unique interdisciplinary perspective. This minor is designed to appeal to a broad range of

students, including social science majors interested in cultural expression, and students in the arts and humanities who wish to deepen their understanding of the cultural aspects of their fields.

Required Courses (3 credits)

- ANT 221 - Introduction to Folklore **Credits:** 3

Folklore Electives (3-9 credits)

One to three courses must come from folklore-related classes, including:

- ANT 330 - The U.S. Folk Experience **Credits:** 3
- ANT 426 - Native American Folklore **Credits:** 3
- ANT 431 - Folklore, the Environment and Public Policy **Credits:** 3

General Electives (6-12 credits)

Up to four courses may come from the following list:

- ANT 102 - Introduction to Anthropology: Diversity of Cultures **Credits:** 3
- ANT 120 - Religions of the World **Credits:** 3
- ANT 430 - Who Owns Native Cultures? **Credits:** 3
- ARH 100 - Art and Human Experience **Credits:** 3
- ARH 155 - Art and Visual Culture in the Ancient and Medieval Worlds **Credits:** 3
- ARH 270 - Topical Survey in History of Art **Credits:** 3
- ARH 460 - Topics in Art History **Credits:** 3
- BIO 205 - Field Natural History of Maine **Credits:** 4
- CLA 202 - Mythology of the Ancient Near East, North Africa and Greece **Credits:** 3
- CLA 400 - Hero: Myth and Meaning **Credits:** 3
- CMJ 106 - Storytelling **Credits:** 3
- ENG 131 - The Nature of Story **Credits:** 3
- ENG 229 - Topics in Literature **Credits:** 3
- ENG 243 - Topics in Multicultural Literature **Credits:** 3
- ENG 342 - Native American Literature **Credits:** 3
- HTY 427 - Vikings! **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
- NAS 102 - Introduction to Wabanaki Culture, History and Contemporary Issues **Credits:** 3
- NAS 201 - Topics in Native American Studies **Credits:** 1-3
- PHI 105 - Introduction to Religious Studies **Credits:** 3
- THE 111 - Introduction to Theatre **Credits:** 3
- THE 300 - Introduction to Performance Studies **Credits:** 3
- THE 460 - Topics in Global Theatre **Credits:** 3

Courses other than those listed require approval from the Minor Coordinator. Three credits may also come from independent study or internship courses, including those in the student's major, with prior approval. Two courses may overlap with the student's major.

Minor: Franco American Studies

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to earn minor: 18

GPA requirements to earn minor: Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.

Minimum Grade requirements for courses to count toward minor: None.

Other requirements: A minimum of 9 credit hours must be completed at the University of Maine.

Contact Information: Susan Pinette, Director of Franco American Studies, (207) 581-3791, spinette@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 at least 3 FAS courses, and at least three additional courses from the list below.

For complete information about Franco-American Studies, contact Susan Pinette, (207) 581-3791, francostudies@maine.edu.

FAS Course Listing (Select at least two courses):

- FAS 120 - People, Places and Pasts **Credits:** 3
- FAS 140 - Searching for Family Origins: Genealogy, DNA, and Family Trees **Credits:** 3
- FAS 170 - Transnational Beat, Jack Kerouac **Credits:** 3
- FAS 200 - SL: Primary Sources in Franco American Studies **Credits:** 3
- FAS 240 - French Exploration and Settlement of Maine, 1604-1760 **Credits:** 3
- FAS 329 - Topics in Franco American Studies **Credits:** 3
- FAS 400 - Internship in Franco American Studies **Credits:** 1-2

Select Three Additional Courses:

- ANT 221 - Introduction to Folklore **Credits:** 3
- ANT 330 - The U.S. Folk Experience **Credits:** 3
- ENG 236 - Intro to Canadian Literature **Credits:** 3
- ENG 244 - Writers of Maine **Credits:** 3
- ENG 336 - Canadian Literature **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 213 - History of the Maine Woods **Credits:** 3
- HTY 261 - New England and Eastern Canada Since 1815: A Transnational Region **Credits:** 3
- HTY 312 - Furs, Frontiers, and Fame: North American Exploration **Credits:** 3
- HTY 349 - Early Modern North America in Atlantic Perspective **Credits:** 3
- HTY 365 - The American Immigrant Experience **Credits:** 3
- HTY 459 - Colonial Canada **Credits:** 3
- HTY 467 - Early 20th Century America, 1914-1945 **Credits:** 3
- HTY 477 - The American Worker **Credits:** 3
- HTY 460 - Modern Canada **Credits:** 3
- SOC 201 - Social Inequality **Credits:** 3
- SOC 325 - Sociology of Religion **Credits:** 3
- SOC 338 - Race and Ethnicity **Credits:** 3

Minor: French

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to earn minor: 18

GPA requirements to earn minor: Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.

Minimum Grade requirements for courses to count toward minor: None.

Other requirements: A minimum of 9 credit hours must be completed at the University of Maine.

Contact Information: Carlos Villacorta, Department Chair, Associate Professor of Spanish, 201 Williams Hall, (207) 581-2072, carlos.villacorta@maine.edu

The requirements for a minor in French are a minimum of 18 credits in the language, nine of which must be above the intermediate level. FRE 102 Elementary French II or three credits of FRE 117 Accelerated French I may be counted toward the minor. For more information and a list of available courses, please contact the Department of Modern Languages and Classics in 201 Williams 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: Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.

Minimum Grade requirement for courses to count towards minor: C- or higher.

Residency requirement: A minimum of 9 credit hours must be completed at the University of Maine.

Contact Information: Samuel Hanes, Geography Program Coordinator, samuel.hanes@maine.edu

The discipline of geography is an inherently interdisciplinary field of study that incorporates domain interests, theory, and methods from the social sciences, humanities, and earth sciences. Geographers' common focus on place, human-environment interactions, and spatial relationships integrates these diverse perspectives. Mapping and spatial analysis are core methods that distinguish geography from many allied fields. Geographers pursue research and teaching in areas as diverse as urban planning, cultural ecology, tourism, geomorphology, and transportation. A particular strength in the UMaine Geography minor is its emphasis on historical geography, a subfield that explores the history of landscape and settlement, economic activity, resource exploitation, and the meaning of place and space.

The geography curriculum will appeal to undergraduates seeking a general yet practical University education. Geographers find employment in such careers as resource management, urban and regional planning, environmental assessment, and conservation, as well as K-12 education, journalism, and the non-profit sector. Students are urged to discuss and plan course selection with the Coordinator.

Required core class (6 credits)

- GEO 100 - World Geography **Credits:** 3

One additional core course from this list:

- GEO 212 - Geography of Maine **Credits:** 3
or
- HTY 212 - Geography of Maine **Credits:** 3
- ANT 235 - Cultural Perceptions of Nature **Credits:** 3

Electives (9 credits)

Three courses from this list (the two core courses above may count as *either* a core course or an elective):

- ANT 212 - The Anthropology of Food **Credits:** 3
- ANT 235 - Cultural Perceptions of Nature **Credits:** 3
- ANT 311 - Geography of Climate Change **Credits:** 3
- ANT 464 - Ecological Anthropology **Credits:** 3
- GEO 212 - Geography of Maine **Credits:** 3
or
- HTY 212 - Geography of Maine **Credits:** 3
- GEO 265 - The Power of Maps **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
- HTY 365 - The American Immigrant Experience **Credits:** 3
- HTY 465 - American Landscapes **Credits:** 3

As part of their electives, students may choose up to two (2) courses from this list:

- ERS 350 - Fresh-Water Flow **Credits:** 3
- ERS 361 - The Principles of Geomorphology **Credits:** 3
- ERS 425 - How to Build a Habitable Planet **Credits:** 3
- ERS 441 - Glaciers and Our Landscape **Credits:** 3

Geographic Methods (3 credits)

One course from this list:

- EHD 462 - Workshop in Elementary Education (Activity) **Credits:** 1-6
Topic: GIS for Educators
- HTY 498 - Senior Seminar in History **Credits:** 3
Topic: Digital and Spatial History (Other topics may be considered, please consult with the Coordinator).
- HTY 599 - Special Topics in History **Credits:** 3 (Consult with the coordinator for topic approval).
- INT 527 - Integration of GIS and Remote Sensing Data Analysis in Natural Resource Applications **Credits:** 3
- SFR 400 - Applied Geographic Information Systems **Credits:** 4
(Students can take GIS 300 - GIS Applications I through University of Maine at Machias)
- SFR 406 - Remote Sensing of the Forest Environment **Credits:** 3
Other courses may be considered; please consult with the Coordinator.

Restrictions:

Anthropology majors: Due to significant course overlap, Anthropology majors may not earn a minor in Geography.

History majors: History majors may earn a minor in Geography, but should be aware that no course taken for the Geography minor will count toward their History major.

Minor: Graphic Design

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to earn minor: 18

GPA requirements to earn minor: Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.

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.

Other requirements: A minimum of 9 credit hours must be completed at the University of Maine.

Contact Information: Justin Wolff, Professor & Chair, Department of Art, 107 Lord Hall, (207) 581-3245,
justin.wolff@maine.edu

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 (12 credits)

- 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 (6 credits):

- ART 182 - Photography and Digital Imaging **Credits:** 3
- ART 200 - Drawing II **Credits:** 3
- ART 240 - Printmaking I **Credits:** 3
- ART 360 - Topics in Studio Art **Credits:** 3
- ART 370 - Digital Art II **Credits:** 3
- CMJ 202 - Communication Theory **Credits:** 3
- CMJ 370 - Visual Communication **Credits:** 3
- CMJ 380 - Advertising, Media and Society **Credits:** 3
- INV 180 - Create: Innovation Engineering I **Credits:** 3
- INV 282 - Advanced Innovation Skills **Credits:** 4
- MKT 270 - Introduction to Marketing **Credits:** 3
- MKT 372 - Integrated Marketing Communication **Credits:** 3
- NMD 104 - New Media Design **Credits:** 3
- NMD 345 - Web Applications **Credits:** 3
- NMD 370 - 3D Modeling and Animation **Credits:** 3

Minor: History

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to earn minor: 18

GPA requirements to earn minor: Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.

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 Wendy Morrill, 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 9 must be at the 300-level or above.

Students minoring in History must achieve a "C" or better and maintain an overall GPA of 2.0 in all History courses to be applied to the minor.

At least 9 credits must be earned from the History Department at the University of Maine. For purposes of this requirement, institutional credit is defined as all University of Maine (Orono) courses regardless of delivery of method (face-to-face, online, ITV, etc.).

Minor: Human Dimensions of Climate Change

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to earn minor: 18

Minimum Grade requirements for courses to count toward minor: Students minoring in HDCC must pass ANT 225 and ANT 410 with at least a C- grade.

GPA requirements to earn minor: Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor filed that are credited toward the completion of the minor.

Other requirements: A minimum of 9 credit hours that include ANT 225 and ANT 410 must be completed at the University of Maine. A minimum of 9 credit hours must be at the 200-level or above.

Contact Information: Samuel Hanes, Chair, Associate Professor of Anthropology, 5773 S. Stevens Hall, (207) 581-1885, Fax: (207) 581-1823, samuel.hanes@maine.edu

Climate Change is one of the leading environmental and human problems facing the world today. Melting glaciers and rising oceans 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. 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. The minor in Human Dimensions of Climate Change explores the diverse human causes and impacts of climate change to better enact successful policy decisions at local, national, and international levels. Students will choose one of two tracks - sociocultural or archaeological - to focus on contemporary or past human dimensions of climate change, respectively.

As an interdisciplinary field that combines the social and environmental sciences, the minor will complement many different major degree programs, including Biology, Earth Sciences, Ecology and Environmental Sciences, Engineering, Forestry, History, Marine Science, Sustainable Agriculture, and Zoology, among others. The curriculum draws on departmental strengths in environmental anthropology and archaeology, and it offers foundational and advanced coursework in HDCC, regional specializations throughout the globe, and topics of special interest.

Required Core Courses (6 credits)

- ANT 225 - Climate Change, Societies and Cultures **Credits: 3**
- ANT 410 - Human Dimensions of Climate Change **Credits: 3**

Sociocultural track (9 credits)

- ANT 102 - Introduction to Anthropology: Diversity of Cultures **Credits: 3**
Plus two of the following:
- 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 290 - Special Topics in Anthropology **Credits: 1-3** (with approval)
- ANT 295 - American Indians and Climate Change **Credits: 3**
- ANT 311 - Geography of Climate Change **Credits: 3**
- ANT 350 - Mediterranean Ancient Landscapes Modern World **Credits: 3**
- ANT 464 - Ecological Anthropology **Credits: 3**
- ANT 466 - Economic Anthropology **Credits: 3**
- ANT 490 - Topics in Anthropology **Credits: 3** (with approval)
- ANT 497 - Department Projects **Credits: Ar** (with approval)

Archaeological track (9 credits)

- ANT 101 - Introduction to Anthropology: Human Origins and Prehistory **Credits: 3**
Plus two of the following
- ANT 290 - Special Topics in Anthropology **Credits: 1-3** (with approval)
- ANT 317 - Fundamentals of Archaeology **Credits: 3**
- ANT 350 - Mediterranean Ancient Landscapes Modern World **Credits: 3**
- ANT 476 - The Ancient Maya **Credits: 3**
- ANT 477 - Field Research in Archaeology **Credits: 2-6**
- ANT 490 - Topics in Anthropology **Credits: 3** (with approval)
- ANT 497 - Department Projects **Credits: Ar** (with approval)

One Science Elective (3 credits)

- BIO 122 - Biology: The Living Science **Credits: 3**
- EES 100 - Human Population and the Global Environment **Credits: 3**
- EES 117 - Introduction to Ecology and Environmental Sciences **Credits: 2**
- ERS 101 - Introduction to Earth Science **Credits: 4**
- ERS 102 - Environmental Geology **Credits: 4**
- ERS 108 - Beaches and Coasts **Credits: 3**
- ERS 121 - Humans and Global Change **Credits: 3**
- ERS 152 - Earth's Changing Climate **Credits: 3**
- ERS 107 - Energy, Environment, & Climate **Credits: 3**
- ERS 240 - The Atmosphere **Credits: 4**

- ERS 323 - Extreme Weather **Credits: 3**
- ERS 425 - How to Build a Habitable Planet **Credits: 3**
- PSE 105 - Principles of Sustainable Agriculture **Credits: 3**
- PSE 312 - Sustainable Food Systems: Challenges and Opportunities **Credits: 3**
- PSE 360 - Agroecology and Sustainable Cropping Systems **Credits: 4**
- SMS 100 - Introduction to Ocean Science **Credits: 3**
- SMS 108 - Beaches and Coasts **Credits: 3**
- SMS 110 - Concepts in Oceanography **Credits: 3**
- SMS 230 - Introduction to Marine Policy and Fisheries Management **Credits: 3**

Minor: Human-Computer Interaction

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to earn minor: 18

GPA requirements to earn minor: : Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.

Minimum Grade requirements for courses to count toward minor: C

Other requirements: A minimum of 9 credit hours must be completed at the University of Maine.

Contact Information: Nicholas Giudice, Computing and Information Science, 331 Boardman Hall, (207) 581-2187, giudice@spatial.maine.edu; Michael Scott, New Media, 403 Chadbourne Hall, (207) 581-4330, mscott@maine.edu

Human-Computer Interaction (HCI) is the study of how humans interact with technology through principled design, communication, and construction. HCI addresses the design, evaluation, and implementation of computer based systems for the benefit of human use. The HCI field has its roots in over 50 years of computer science theory, as well as in the applied social and behavioral sciences. HCI explores the technological advances and the increasing pervasiveness of computing devices in our society. With an emphasis on making computing technologies more user-friendly, HCI has emerged as a dynamic, multifaceted area of study that merges theory from science, engineering, and design--as well as concepts and methodologies from psychology, anthropology, sociology, and industrial design--with the technical concerns of computing.

Key Concepts, Skills, and Methods:

- Learn technical considerations involved with HCI
- Develop problem solving skills for creating effective HCI environments
- Understand interrelationships of HCI to professions and fields of study
- Perform fieldwork for understanding HCI user needs and the influence of context
- Generative approaches to imagining many possible solutions
- Iterative refinement of designs
- Implementation of interactive prototypes
- Evaluation techniques, including empirical evaluation methods

Benefits of the Minor:

- True interdisciplinary minor
- Provide students with essential 21st Century skills
- Increase knowledge base beyond common core
- Introduce students to cutting-edge technologies

- Enhance current degree focus
- Teach job-ready design skills for the modern IT workplace

Note: The only prerequisite for this minor is an introductory-level college-programming course (such as COS 120, COS 125, COS 220 or NMD 105).

Required courses (6 credits)

- NMD 342 - Interaction Design and Physical Computing **Credits:** 3
- SIE 415/515 Human Computer Interaction **Credits:** 3

Four or more of the following courses (minimum of 12 credits)

- COS 417 - Spatial Interaction Design **Credits:** 3
- HCI 395 - Human Computer Interaction Internship **Credits:** 1-3
- NMD 306 - Community Collaboration and Development **Credits:** 3
- NMD 442 - User Experience Design **Credits:** 3
- PSY 350 - Cognition **Credits:** 3
- PSY 361 - Sensation and Perception **Credits:** 3
- SIE 416/516 - Virtual Reality: Research and Applications **Credits:** 3

Minor: International Affairs

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to earn minor: 18

GPA requirements to earn minor: Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.

Minimum Grade requirements for courses to count toward minor: C

Foreign Language requirements: Two semesters of a language or study abroad in immersion in a foreign language. For students who choose study abroad to satisfy this requirement, 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.

Other requirements: A minimum of 9 credit hours must be completed at the University of Maine.

Contact Information: Kristin Vekasi, Associate Professor, Director, 207.581.1871, kristin.vekasi@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 core curriculum
- Choose from one of the 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: Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.

Minimum Grade requirements for courses to count toward minor: None.

Other requirements: A minimum of 9 credit hours must be completed at the University of Maine.

Contact Information: Dan Barrett, Advisor, Minor in Jazz Studies, Class of 1944 Hall, 581-1238

The Minor in Jazz Studies offers students an in-depth experience with jazz, which was designated an American National Treasure by the 100th U.S. Congress in 1987. The Objective is for the students to develop skills in jazz theory, composition, and performance, which will allow them to continue to be involved in this music throughout their musical lives.

The program is centered on the study of jazz through the art of improvisation, or spontaneous musical composition. Rather than simply learning about jazz and improvisation, students will spend their time practicing and developing listening skills and instrumental skills, so that they can comfortably improvise in various jazz styles in a solo or group setting. Multiple public performances are built into the required courses. In addition, highly specific arranging and keyboard skills are developed and used as part of the materials to be covered.

Students who elect this program must play a musical instrument pitched in C, Bb, or Eb, capable of single-note pitches and a full chromatic scale. Vocalists and percussionists will need to play an instrument that meets these criteria as well, although there are also opportunities to sing and play drum set.

Music Theory Fundamentals (6 credits):

- MUP 205 - Piano Class I **Credits:** 1
- MUP 206 - Piano Class II **Credits:** 1
- MUY 111 - Elementary Harmony I **Credits:** 2
- MUY 112 - Elementary Harmony II **Credits:** 2

Upper Level Courses (6 credits):

- MUY 310 - Jazz Theory Fundamentals **Credits:** 3
and
- MUY 412 - Jazz Pedagogy **Credits:** 3
or
- MUY 410 - Jazz Arranging **Credits:** 3
and
- MUY 411 - Jazz Piano **Credits:** 3

Performing Organizations (2 credits):

- MUO 143 - UMAINE Jazz Ensemble **Credits:** 0-1
or
- MUO 155 - Chamber Jazz Ensemble **Credits:** 0-1

History (3 credits):

- MUH 150 - History of Jazz **Credits:** 3

Electives (2 credits):

- MUO 143 - UMAINE Jazz Ensemble **Credits:** 0-1
- MUO 155 - Chamber Jazz Ensemble **Credits:** 0-1
- MUS 201 - Applied Music Lessons **Credits:** 1
- MUS 210 - Applied Music Lessons **Credits:** 2
- MUY 113 - Elementary Sight Singing and Ear Training I **Credits:** 2
- MUY 114 - Elementary Sight Singing and Ear Training II **Credits:** 2
- MUY 412 - Jazz Pedagogy **Credits:** 3
- MUY 411 - Jazz Piano **Credits:** 3

Specimen Curriculum:

First Year

Fall

- MUP 205 - Piano Class I **Credits:** 1
- MUY 111 - Elementary Harmony I **Credits:** 2

Spring

- MUP 206 - Piano Class II **Credits:** 1
- MUY 112 - Elementary Harmony II **Credits:** 2

Second Year

Fall

- MUY 310 - Jazz Theory Fundamentals **Credits:** 3
Ensemble

Spring

- MUH 150 - History of Jazz **Credits:** 3
Elective

Third Year

Fall

- MUY 410 - Jazz Arranging **Credits:** 3
Ensemble

Spring

- Elective

Entering Skills

The minor in Jazz Studies at the University of Maine is designed for the general university student as well as for music majors. However, to avoid frustration, you should make sure you have some general skills prior to enrolling in the minor:

Reading Skills: Entering students must be prepared to develop sufficient reading skills in both treble and bass clefs to participate in the theory courses, piano courses, and ensembles, etc. If there is a doubt, contact Dan Barrett at dan.barrett@maine.edu for assistance and/or clarification.

Music writing skills: The minor in Jazz Studies involves a substantial amount of music arranging and writing, and students will be expected to write legibly, using established notation practices. Using music notation software is encouraged, but you will also need to be able to write out musical ideas by hand.

Instrumental skills: It is important to be able to negotiate a standard musical instrument of any sort (all band and orchestral instruments, keyboard instrument of all types, guitar, electric bass, and pitched percussion are all acceptable, for example) well enough to participate fully with the materials used in the classes.

Piano/keyboard skills: While great keyboard facility is not required for students entering the minor, the ability to reach chords and melodies on the piano, in both treble and bass clefs will be necessary for participation in MUY 410.

Minor: Journalism

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to earn minor: 18

GPA requirements to earn minor: Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.

Minimum Grade requirements for courses to count toward minor: Grade of "C" or higher required in all courses.

Other requirements: A minimum of 9 credit hours must be completed at the University of Maine.

Contact Information: Judith Rosenbaum, Associate Professor, Chair, Department of Communication and Journalism, 420 Dunn Hall, 207.581.1935; judith.rosenbaumandre@maine.edu

Firmly grounded in the liberal arts, the minor degree in Journalism provides students with an understanding of the practice and profession of journalism. The minor introduces students to the history of journalism, the basics of media writing, and the contemporary landscape of journalistic forms. Students also sample from various practice courses to advance their skills as journalists.

Required core:

- CMJ 111 - Introduction to Journalism **Credits: 3**
- CMJ 136 - Journalism Writing and Editing **Credits: 3**
- CMJ 211 - Journalism and Media History **Credits: 3**

Nine credits from the following:

Practice courses:

- CMJ 237 - Journalism Across Platforms **Credits: 4**
- CMJ 261 - Photographic Reporting and Storytelling **Credits: 3**
- CMJ 332 - Public Affairs Reporting and Research **Credits: 3**
- CMJ 351 - Audio and Video 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**

Internship or Practicum

- CMJ 395 - Student Media Practicum **Credits: 1-3**
- or
- CMJ 495 - Internship **Credits: 1-3**

Topics courses (with advance approval from Department Chair)

- CMJ 391 - Topics in Journalism **Credits: 3**

Minor: Judaic Studies

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to earn minor: 18

GPA requirements to earn minor: Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.

Minimum Grade requirements for courses to count toward minor: Grade of "C" or higher required in all courses.

Other requirements: A minimum of 9 credit hours must be completed at the University of Maine.

Contact Information: Derek A. Michaud, Lecturer, Department of Philosophy and Coordinator of Judaic Studies, (207) 581-3890, derek.a.michaud@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. 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.

Tracks:

Two tracks are available. Judaic Studies and Judaic Studies, Language track.

Required Courses for Judaic Studies Track:

- JST 200 - Introduction to Judaism **Credits:** 3
- JST 205 - Jewish History and Antisemitism from Antiquity to the Founding of the State of Israel **Credits:** 3
- 4 Elective courses (12 credits)

Required Courses for Judaic Studies, Language Track:

- HBR 101 - Beginning Modern Hebrew **Credits:** 3
- HBR 102 - Beginning Modern Hebrew II **Credits:** 3
- JST 200 - Introduction to Judaism **Credits:** 3
- JST 205 - Jewish History and Antisemitism from Antiquity to the Founding of the State of Israel **Credits:** 3
- 2 elective courses (6 credits)

Elective Courses:

Courses marked by an asterisk (*) may be taken as electives when in the judgment of the Coordinator of Judaic Studies the topic is clearly relevant. Additional courses not listed here may be taken as electives with the consent of the Coordinator.

- ANT 120 - Religions of the World **Credits:** 3
- ANT 249 - Religion and Violence **Credits:** 3
- ANT 256 - Ethnic Conflict **Credits:** 3
- ANT 290 - Special Topics in Anthropology **Credits:** 1-3 *
- ANT 490 - Topics in Anthropology **Credits:** 3 *
- ANT 497 - Department Projects **Credits:** Ar *
- CLA 202 - Mythology of the Ancient Near East, North Africa 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)
- HON 349 - Tutorial Alternative Portfolio **Credits:** 0 *
- HON 350 - Honors Seminar **Credits:** 3 *
- HON 498 - Honors Thesis/Research I **Credits:** 3 *
- HON 499 - Honors Thesis/Research II **Credits:** 3 *
- HTY 199 - Problems in History **Credits:** 3 *
- HTY 235 - Heresy, Witchcraft, and Reform **Credits:** 3
- HTY 398 - Historical Issues **Credits:** 1-3 *
- HTY 411 - The Holocaust **Credits:** 3
- HTY 446 - History of Modern Middle East, 1800-Present **Credits:** 3
- HTY 498 - Senior Seminar in History **Credits:** 3 *
- JST 383 - Topics in Judaic Studies **Credits:** 3
- PAX 201 - Introduction to Peace and Reconciliation Studies **Credits:** 3
- MUH 650 Topics in Music History: Entartete Musik: Degenerate Music (see Graduate Catalog for description)

- PAX 398 - Topics in Peace and Reconciliation Studies **Credits: 3**
Topic: Genocide
- PAX 491 - Forgiveness: Creating a Culture of Peace and Reconciliation **Credits: 3**
- PAX 498 - Special Projects in Peace and Reconciliation Studies **Credits: 1-6**
- PHI 105 - Introduction to Religious Studies **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 ***
- 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 - Terrorism **Credits: 3**
- POS 386 - Religion and Politics in the United States **Credits: 3**
- POS 498 - Independent Study in Political Science **Credits: 1-3 ***
- SOC 308 - Problems of Violence and Terrorism **Credits: 3**
- SOC 325 - Sociology of Religion **Credits: 3**
- SOC 493 - Senior Thesis **Credits: 3 ***
- SOC 499 - Senior Capstone **Credits: 3 ***

Minor: Leadership Studies

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to earn minor: 18

Minimum Cumulative GPA required to earn minor: 2.50

Minimum Grade for courses to count toward minor: C-

Residency Requirement: A minimum of 9 credit hours must be completed at the University of Maine

No more than 6 credits can overlap with those being counted toward another Major or Minor

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.

A. Core Requirements (12 credits)

1. LDR 100

- 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 - Leadership and Decision Making **Credits: 2**
- MSL 202 - Army Doctrine and Development **Credits: 2**

2. LDR 200

- LDR 200 - Leadership Ethics **Credits: 3**

3. LDR 300

- LDR 300 - Advanced Leadership Theory and Practice **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.
- NUR 444 - Management and Leadership in Health Care System **Credits: 3**

4. Applied Leadership. 3 credits from the following:

- LDR 380 - SL: Leadership and Service **Credits: 3**
- LDR 495 - Washington D.C. Leadership Institute **Credits: 3**
- LDR 499 - Leadership Engagement Practicum **Credits: 3**

With pre-approval the following courses, or 400-level practicum/internship courses within specific disciplines, may be used to satisfy this requirement:

- CAN 499 - Internship-Canadian Studies **Credits: 1-3**
- EHD 490 - Full-Day Student Teaching (Elementary) **Credits: 1 - 12**
- EHD 491 - Full-Day Student Teaching (Secondary) **Credits: 1 - 12**
- EHD 494 - Student Teaching K-12 (Art or Music) **Credits: 1 - 12**
- EHD 496 - Advanced Internship (Elementary) **Credits: 2-6**
- EHD 497 - Advanced Internship (Secondary) **Credits: 2-6**
- EHD 499 - Student Teaching K-12 (Kinesiology and Physical Education) **Credits: 1 - 12**
- GEE 430 - Engineering Leadership and Management Internship **Credits: 3**
- INV 480 - Internship in Innovation **Credits: 1-6**
- KPE 427 - Health Fitness Internship **Credits: 3-6**
- MSL Leadership Training Course (LTC)
- MSL Leader Development and Assessment Course (LDAC)
- POS 487 - SL: Practicum in Engaged Policy Studies I **Credits: 3**
- POS 488 - SL: Practicum in Engaged Policy Studies II **Credits: 3**

- POS 493 - American Politics Internship **Credits:** 3, 6 or 9
- POS 495 - Congressional Internship **Credits:** 6 or 9
- POS 496 - International Affairs Internship **Credits:** 3, 6 or 9
- SOC 495 - Internship in Sociology **Credits:** 3 - 9

B. Leadership Electives (6 credits from the following list):

- LDR 210 - Leadership and Sports **Credits:** 3
- LDR 220 - Leadership and Social Movements **Credits:** 3
- LDR 330 - Crisis Leadership and Decision Making **Credits:** 3
- LDR 340 - Inclusive Leadership **Credits:** 3
- LDR 350 - Topics in Leadership Studies **Credits:** 3
- LDR 370 - Leadership through Advocacy and Lobbying **Credits:** 3
- LDR 390 - Contemporary Leadership and the Art of Political Strategy **Credits:** 3
- LDR 395 - Bipartisan Leadership: Lessons for William S. Cohen's Career in Public Service **Credits:** 3
Any LDR course at the 400-level and above that is not being used to satisfy the Applied Leadership requirement
- CHF 417 - Introduction to Leadership in Early Childhood Education **Credits:** 3
- CMJ 102 - Fundamentals of Interpersonal Communication **Credits:** 3
- CMJ 103 - Public Speaking **Credits:** 3
- CMJ 345 - SL: Small Group Communication **Credits:** 3
- CMJ 347 - Argument and Critical Thinking **Credits:** 3
- CMJ 367 - Public Relations **Credits:** 3
- CMJ 403 - Persuasion and Social Influence **Credits:** 3
- EHD 203 - Educational Psychology **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 - Advanced Innovation Skills **Credits:** 4
- KPE 344 - Principles of Coaching **Credits:** 3
- KPE 383 - Organization and Administration in Athletic Training **Credits:** 3
- KPE 426 - Exercise Prescription and Leadership **Credits:** 3
- MGT 325 - Principles of Management and Organization **Credits:** 3
- MGT 326 - Organizational Behavior **Credits:** 3
- MGT 330 - Human Resource Management **Credits:** 3
- MGT 342 - Small Business Management **Credits:** 3
- MGT 445 - International Management **Credits:** 3
- MGT 449 - Strategic Management **Credits:** 3
- MSL 301 - Training Management and the Warfighting Functions **Credits:** 3
- MSL 302 - Training Applied Leadership in Small Unit Operations **Credits:** 3
- MSL 401 - The Army Officer **Credits:** 4
- MSL 402 - Company Grade Leadership **Credits:** 4
- NAV 303 - Leadership and Management **Credits:** 3
- NAV 304 - Leadership and Ethics **Credits:** 3
- NUR 335 - Care of Adults III Clinical **Credits:** 2
- NUR 413 - Nursing Care Management of Women, Infants and Families **Credits:** 3
- NUR 416 - Nursing Care Management of Children and Families **Credits:** 3

- NUR 417 - Nursing Care Management of Children and Families Clinical **Credits: 1**
- NUR 444 - Management and Leadership in Health Care System **Credits: 3**
- PAX 370 - Building Sustainable Communities **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**
- 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 242 - Ethics in Professional Life **Credits: 3**
- POS 301 - Classical 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 354 - The U.S. Presidency **Credits: 3**
- POS 474 - Conduct of Foreign Policy **Credits: 3**
- POS 475 - International Security **Credits: 3**
- PSY 251 - Psychology of Motivation **Credits: 3**
- SOC 325 - Sociology of Religion **Credits: 3**
- SWK 350 - Human Behavior and the Social Environment I **Credits: 3**
- SWK 351 - Human Behavior in the Social Environment II **Credits: 3**
- THE 466 - Stage Directing **Credits: 3**
- WGS 301 - Intermediate Topics in Women's, Gender, and Sexuality Studies **Credits: 3**
- WGS 303 - Social Movements, Media and Change **Credits: 3**
- WGS 401 - Advanced Topics in Women's, Gender, and Sexuality Studies **Credits: 3**

Minor: Legal Studies

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to earn minor: 18

GPA requirements to earn minor: Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.

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.

Other requirements: A minimum of 9 credit hours must be completed at the University of Maine.

Contact Information: Mark D. Brewer, Professor, 13A Boudreau Hall, (207) 581-1871, mark.brewer@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) 581-1863 or mark.brewer@maine.edu

For information about general pre-law studies and/or advice for students interested in attending law school, contact Pre-Law advisor Lisa M. Carter (300 Memorial Union) at (207) 581-1359 or lisa.m.carter@maine.edu

Requirements:

A Minor in Legal Studies 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 minimum of 9 Legal Studies credits must be taken at UMaine. 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:

- ACC 312 - Federal Income Taxation **Credits: 3**
- ANT 260 - Forensic Anthropology **Credits: 3**
- ANT 270 - Environmental Justice Movements in the United States **Credits: 3**
- CHF 404 - Selected Topics in Child Development and Family Life **Credits: 3**
(legal topics only)
- CHF 452 - Violence in the Family **Credits: 3**
- CHF 488 - Family Legal Issues **Credits: 3**
- CMJ 375 - Journalism and Media Law **Credits: 3**
- ECO 471 - Public Finance and Fiscal Policy **Credits: 3**
- EES 324 - Environmental Protection Law and Policy **Credits: 3**
- ENG 229 - Topics in Literature **Credits: 3**
(legal topics only)
- FSN 436 - Food Laws and Regulations **Credits: 3**
- HTY 464 - America at the Crossroads: The Era of Civil War Reconstruction 1840-1876 **Credits: 3**
- LDR 200 - Leadership Ethics **Credits: 3**
- MGT 220 - The Legal Environment of Business **Credits: 3**
- MSL 402 - Company Grade Leadership **Credits: 4**
- NAV 304 - Leadership and Ethics **Credits: 3**
- PAX 451 - Mediation: Its Premises, Practices and Policies **Credits: 3**
- PHI 235 - Biomedical 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 349 - Topics in Comparative Politics **Credits: 3**
(legal topics only)
- POS 359 - Topics in American Government **Credits: 3**
(legal topics only)

- POS 369 - Topics in International Relations **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**
- SOC 214 - Crime and Criminal Justice **Credits: 3**
- SOC 220 - Sociology of Deviance **Credits: 3**
- CRJ 314 - Law and Society **Credits: 3**
- SOC 324 - Domestic Violence **Credits: 3**
- SVT 221 - Boundary Law **Credits: 3**
- SVT 451 - Survey Business Law **Credits: 3**
- WLE 470 - Wildlife Policy and Administration **Credits: 3**

Minor: Maine Studies

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to earn minor: 18

GPA requirements to earn minor: Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the 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.

Other requirements: A minimum of 12 credit hours must be completed at the University of Maine.

Contact Information: Stephen Miller, Professor, Chair, Department of History, 207.581.1905, stephen.miller@maine.edu

The minor in Maine Studies explores Maine's cultural, historical, and physical landscapes. While of value to anyone interested in Maine, the minor is especially useful for those planning to work in fields such as education, tourism, social work, health care, business, and public policy. To complete the minor, students 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 credits hours must be University of Maine courses. Courses can be on campus, online, or a combination.

Students interested in the Maine Studies minor should contact the Maine Studies office 207-581-1840 or at email: folklife@maine.edu

Required courses: (6 credits)

- MES 101 - Introduction to Maine Studies **Credits: 3**
- MES 201 - The Maine Coast **Credits: 3**

Electives: (12 credits)

- ANT 426 - Native American Folklore **Credits: 3**
- ARH 460 - Topics in Art History **Credits: 3** (Topic: Art, Maine, and a Sense of Place)
- BIO 205 - Field Natural History of Maine **Credits: 4**

- ENG 244 - Writers of Maine **Credits: 3**
- ENG 429 - Topics in Literature and Language **Credits: 3**
- ERS 102 - Environmental Geology **Credits: 4**
- FAS 101 - Introduction to the French cultures of North America **Credits: 3**
- FAS 240 - French Exploration and Settlement of Maine, 1604-1760 **Credits: 3**
- FAS 329 - Topics in Franco American Studies **Credits: 3**
- GEO 212 - Geography of Maine **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 222 - Maine Indian History in the Twentieth Century **Credits: 3**
- MES 298 - Topics in Maine Studies **Credits: 3**
- MES 301 - Rachel Carson, Maine, and the Environment **Credits: 3**
- MES 350 - Maine Women **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 230 - Maine Indian History in the Twentieth Century **Credits: 3**
- NAS 401 - Advanced Topics in Native American Studies **Credits: 3**
- POS 203 - American State and Local Government **Credits: 3**
- POS 362 - Maine Government **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: Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.

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: Don Beith, Assistant Professor of Philosophy, Coordinator of Marxist and Socialist Studies, The Maples; phone: 581-3866; email: donald.beith@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 are required to take a minimum of 18 credits. This should include two or more courses from the Core Courses and the remaining 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 dallen@maine.edu. Other courses not listed may be acceptable. Interested students should consult with the faculty coordinator for a decision on such matters.

Core Courses (6 or more 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 101 - Introduction to Labor Studies **Credits: 3**
- LST 201 - Work and Labor in a Global Economy **Credits: 3**
- PHI 342 - Marxist Philosophy I: The Philosophy of Karl Marx **Credits: 3**

Elective Courses (the remaining credits for a total of 18 credits)

- ANT 466 - Economic Anthropology **Credits: 3** /ANT 566 - Economic Anthropology **Credits: 3**
- 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**
- ECO 180 - Citizens, Energy & Sustainability **Credits: 3**
- ECO 433 - Labor Economics **Credits: 3**
- HTY 218 - History of Film **Credits: 3**
- HTY 240 - Creation of the Atlantic World, 1450-1888 **Credits: 3**
- HTY 241 - History of Globalization, 1900-Present **Credits: 3**
- HTY 409 - European Society and Culture in the Age of Total War **Credits: 3**
- HTY 442 - The United States and Vietnam: A History **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**
- HTY 477 - The American Worker **Credits: 3**
- MUH 150 - History of Jazz **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**
- POS 336 - Government and Politics in Russia **Credits: 3**
- SOC 201 - Social Inequality **Credits: 3**
- SOC 360 - Major Ideas in Sociology **Credits: 3**
- SWK 320 - Introduction to Social Work **Credits: 3**
- SWK 330 - Contemporary Issues in Diversity and Pluralism **Credits: 3**
- WGS 303 - Social Movements, Media and Change **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: Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.

Minimum Grade requirements for courses to count toward minor: A "C" or better is required in all Math (MAT) and Statistics (STS) courses.

Other requirements: A minimum of 9 credit hours must be completed at the University of Maine.

Contact Information: Jack Buttane, Department of Mathematics and Statistics, Room 333 Neville Hall, 581-3907, jack.buttane@maine.edu

The minor in mathematics consists of 24 credits: 12 credits from the three core calculus courses (MAT 126, 127 and 228) and 12 credits from a broad selection of approved elective mathematics courses. Elective courses must include at least one 3-credit MAT course at 400-level or above, and may include at most one approved 3 credit course without an MAT prefix (i.e. an approved STS course or an approved course from outside the Department of Mathematics and Statistics).

Approved elective courses at 200 or 300 level include:

- 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
- MAT 362 - Linear Algebra II Credits: 3
- STS 235 - Introduction to Statistical Methods Credits: 3
- STS 332 - Statistics for Engineers 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.

Approved elective MAT/STS courses at upper-level include:

- Almost all MAT classes at 400 or 500 level
- STS 434 - Probability Theory Credits: 3
- STS 437 - Statistical Methods in Research Credits: 3

Approved elective courses from other departments include:

- CHE 350 - Statistical Process Control and Analysis Credits: 3
- CHE 352 - Process Control Credits: 3
- COS 454 - Data Structures and Algorithms Credits: 3
- ECE 314 - Signals and Systems Credits: 3
- ECE 316 - Random Signal Analysis Credits: 3
- ECE 351 - Fields and Waves Credits: 3
- ECE 414 - Feedback Control Systems Credits: 3
- ECE 486 - Digital Signal Processing Credits: 4
- MEE 370 - Modeling, Analysis and Control of Mechanical Systems Credits: 3
- MEE 444 - Robot Dynamics and Control Credits: 3

- MEE 456 - Introduction to the Finite Element Method Credits: 3
- MEE 459 - Engineering Optimization Credits: 3
- PHY 472 - Geometrical and Fourier Optics Credits: 3

To enquire whether a particular course is approved for the minor please contact the mathematics department at 581-3901.

Required Courses:

- MAT 126 - Calculus I **Credits:** 4
- MAT 127 - Calculus II **Credits:** 4
- MAT 228 - Calculus III **Credits:** 4

Elective Courses:

12 credits from a broad selection of mathematics courses, including MAT 258, MAT 259, MAT 261, MAT 262, MAT 362 and all of our classes at 400-level. Elective courses must include at least one 3-credit MAT course at 400-level or above, and may include at most one approved 3 credit course without an MAT prefix (i.e. an approved STS course or an approved course from outside the Department of Mathematics and Statistics).

Minor: Media Studies

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to earn minor: 18

GPA requirements to earn minor: Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.

Minimum Grade requirements for courses to count toward minor: C- or higher.

Other requirements: A minimum of 9 credit hours must be completed at the University of Maine.

Contact Information: Judith Rosenbaum-Andre, Chair, 414 Dun Hall, 207.581.1934, judith.rosenbaumandre@maine.edu

Firmly grounded in the liberal arts, the minor degree in Media Studies provides students with an understanding of different roles that media play in society. The minor introduces students to humanistic and social science traditions of media research, teaches students about the influence that media forms and institutions have, and provides instruction in the critical evaluation of different kinds of media communication.

Required Courses

- CMJ 376 - Modes of Media Criticism **Credits:** 3
- CMJ 211 - Journalism and Media History **Credits:** 3
- CMJ 203 - Media Theories and Research Methods **Credits:** 3

Elective Courses

Select three courses from the following list:

- CMJ 100 - Introduction to Media Studies **Credits: 3**
- CMJ 107 - Communication and the Environment **Credits: 3**
- CMJ 245 - Film Criticism and Theory **Credits: 3**
- CMJ 314 - International Media **Credits: 3**
- CMJ 370 - Visual Communication **Credits: 3**
- CMJ 367 - Public Relations **Credits: 3**
- CMJ 375 - Journalism and Media Law **Credits: 3**
- CMJ 380 - Advertising, Media and Society **Credits: 3**
- CMJ 398 - Topics in Media Studies **Credits: 3**
- CMJ 425 - SL: Health Campaigns **Credits: 3**

For Communication or Journalism Majors: No more than one course may count both in the major and the Media Studies Minor.

Minor: Medieval and Renaissance Studies

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to earn minor: 18

GPA requirements to earn minor: Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.

Minimum Grade requirements for courses to count toward minor: C-

Other requirements: A minimum of 9 credit hours must be completed at the University of Maine.

Contact Information: Michael Grillo, Department of Art, 219 Lord Hall, (207) 581-3252; grillo@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 sixteenth. It incorporates offerings from the departments of Art, English, History, Modern Languages and Classics, and Political Sciences, as well as the Honors College, to explore issues of social structure, philosophy, religion, politics, language, poetry, prose, material culture, and visual expression from an interdisciplinary perspective.

Students who elect this curriculum usually begin their exploration of the period through introductory courses, such as ARH 155, ARH 156, HON 112, HON 211, and HTY 105, only one of which counts towards the total credits of the curriculum, and continue on with more focused studies at higher course levels. Students are encouraged to take courses from all of its disciplines.

For complete information about Medieval and Renaissance Studies, visit the coordinator at 219 Lord Hall, phone (207) 581-3252 or contact Associate Professor Michael Grillo at 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**
- HON 112 - Civilizations: Past, Present and Future II **Credits: 4**

- HON 211 - Civilizations: Past, Present and Future III **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 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 353 - Shakespeare and the English Renaissance **Credits: 3**

History

- HTY 202 - Medieval Civilization **Credits: 3**
- HTY 403 - Early Middle Ages **Credits: 3**
- HTY 404 - Late Middle Ages **Credits: 3**
- HTY 405 - Early Modern Europe: The Age of Reform **Credits: 3**
- HTY 427 - Vikings! **Credits: 3**

Modern Languages and Classics

- FRE 390 - Topics in French **Credits: 1-3**
- SPA 401 - Golden Age **Credits: 3**

Political Science

- POS 303 - Early Modern Political Thought **Credits: 3**

*Special topics and Capstone courses will be considered for the minor by request when these courses are centered on Medieval and Renaissance eras.

Minor: Mental Health and Rehabilitation

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to earn minor: 21

GPA requirements to earn minor: Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.

Minimum Grade requirements for courses to count toward minor: D-

Other requirements: A minimum of 12 credit hours must be completed at the University of Maine (MHR designator)

Contact Information: Benjamin Guenther, 356 Williams Hall, 581-2025, benjamin.guenther@maine.edu

The minor in Mental Health and Rehabilitation offers classes related to mental health and rehabilitation. Students completing all 7 courses in the Mental Health and Rehabilitation minor at the University of Maine are eligible for State of Maine MHRT/Community certification. Students apply directly to the State of Maine for certification.

Required Courses: (21 credits)

- MHR 200 - Behavioral & Community Mental Health Systems **Credits:** 3
- MHR 205 - Introduction to Counseling Skills **Credits:** 3
- MHR 210 - Vocational Aspects of Disability and Psychiatric Rehabilitation **Credits:** 3
- MHR 300 - Case Management **Credits:** 3
- MHR 305 - Trauma, Crisis and Recovery **Credits:** 3
- MHR 310 - Counseling Diverse Populations **Credits:** 3
- MHR 315 - Substance Use and Dual Diagnosis Counseling **Credits:** 3

Minor: Music

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to earn minor: 18-19

GPA requirements to earn minor: Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.

Minimum Grade requirements for courses to count toward minor: C- or better.

Other requirements: A minimum of 9 credit hours must be completed at the University of Maine.

Contact Information: Stuart Marrs, Music Minor Advisor, marrs@maine.edu (207)581-4703; Laura Artesani, Chair, Division of Music, laura.artesani@maine.edu (207)581-1745.

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 18 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 (2 or 3 credits):

- MUS 298 - Special Subjects in Music **Credits:** 1-3
- MUH 150 - History of Jazz **Credits:** 3

or

- 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: Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.

Minimum Grade requirements for courses to count toward minor: A grade of C or better in the Core Native American Studies Courses

Other requirements: A minimum of 9 credit hours must be completed at the University of Maine.

Contact Information: Darren Ranco, Chair of Native American Programs, 5724 Dunn Hall, 581-9485, darren.ranco@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.edu, Chair of Native American Programs in Dunn Hall or call (207) 581-4450.

Core Classes:

A grade of C or better is required in these classes.

- 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 electives: (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**
- ENG 342 - Native American Literature **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 202 - Wabanaki Languages I **Credits: 3**
- NAS 203 - Wabanaki Language II **Credits: 3**
- NAS 230 - Maine Indian History in the Twentieth Century **Credits: 3**
- NAS 270 - Gender in Native American Cultures **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 - Gender in Native American Cultures **Credits: 3**

Minor: New Media

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to earn minor: 18

GPA requirements to earn minor: Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.

Minimum Grade requirements for courses to count toward minor: C-

Other requirements: A minimum of 9 credit hours must be completed at the University of Maine.

Contact Information: Velma Figgins, Administrative Specialist, 5711 Boardman Hall, Room 348, 207-581-4358

Interested in new/emerging media and technology? The New Media minor may be perfect for you. The Department of New Media created the minor in new/emerging media for the consideration of all students at the University of Maine. Expertise in new and emerging media enhances any major. Expand your comprehension of contemporary communication practices-including digital, mobile, and social media-while learning some of the most effective ways to interact in this continuously evolving environment. Focus on both critical and creative tools across disciplines to build upon your specific goals and interests.

This minor in New Media is designed to prepare students to perform professionally, academically, and personally in a diverse new media environment. The minor provides a foundation upon which students build an understanding of New Media in relation to art, art history, communication, computer science, English, engineering, philosophy, psychology, music, and more.

The minor in New Media is designed for students seeking an introduction to the interdisciplinary applications of computer-based media. The minor enables students from a variety of majors to:

- Learn the technical considerations involved with computer-based manipulation of image.
- Develop aesthetic abilities and problem-solving skills required in creating effective communication in digital environments.
- Understand the interrelationships of new digital media to various professions and fields of study.

The New Media minor explores multiple perspectives of how information or content is created and shaped in new and emerging media, as well as the role and impact of those media on human communication. New Media refers to the emerging digital technologies that enable information to be produced, stored, transmitted, and displayed in new ways. Students will gain an understanding of how these technologies change the ways various types of content can be created, managed, and distributed, as well as their potential to influence the content itself.

Key Concepts, Skills, and Methods

- Fieldwork for understanding people's needs and the influence of context
- Generative approaches to imagining many possible solutions, such as sketching and an interaction design method known as User Experience prototyping
- Iterative refinement of designs
- Implementation of iterative prototypes
- Evaluation techniques, including empirical evaluation methods

Benefits of this Minor

- Provides students with a variety of digital technology skills
- Increases knowledge base beyond common core
- Introduces students to cutting-edge digital technologies
- Application of New Media concepts in support of a wide variety of majors

- Job-ready problem-solving and design skills for the modern workplace

Minor Requirements

Students pursuing the minor in New Media must complete a total of 18 credits, including 6 credits of introduction to New Media and 12 credits of New Media elective courses.

Introduction to New Media (6 credits)

- NMD 100 - Introduction to New Media **Credits: 3**
- NMD 104 - New Media Design **Credits: 3**
- NMD 105 - Creative Coding I **Credits: 3**
- NMD 106 - Time-Based Media **Credits: 3**

Electives in New Media (12 credits)

- NMD 200 - Designing Humane Tech **Credits: 3**
- NMD 211 - Creative Coding II **Credits: 3**
- NMD 212 - Rapid Prototyping **Credits: 3**
- NMD 245 - Film Criticism and Theory **Credits: 3**
- NMD 250 - Electronic Music Composition I: Item and Arrangement **Credits: 3**
- NMD 251 - Electronic Music Composition II: Composing a Process **Credits: 3**
- NMD 306 - Community Collaboration and Development **Credits: 3**
- NMD 324 - Introduction to Narrative Film Making **Credits: 3**
- NMD 340 - Designing and Creating Websites **Credits: 3**
- NMD 341 - Documentary Photography and Storytelling **Credits: 3**
- NMD 342 - Interaction Design and Physical Computing **Credits: 3**
- NMD 343 - SL: Digital Narrative Workshop I **Credits: 3**
- NMD 344 - Motion Graphics & Design I **Credits: 3**
- NMD 345 - Web Applications **Credits: 3**
- NMD 358 - Documentary Film Criticism and Theory **Credits: 3**
- NMD 370 - 3D Modeling and Animation **Credits: 3**
- NMD 424 - Narrative Film Making **Credits: 3**
- NMD 441 - Documentary Video and Storytelling **Credits: 3**
- NMD 442 - User Experience Design **Credits: 3**
- NMD 443 - Digital Narrative Workshop II **Credits: 3**
- NMD 444 - Motion Graphics & Design II **Credits: 3**
- NMD 445 - Mobile Applications **Credits: 3**

Minor: Philosophy

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to earn minor: 18

GPA requirements to earn minor: Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.

Minimum Grade requirements for courses to count toward minor: A grade of C- or better is required in any Philosophy courses counting towards minor.

Other requirements: A minimum of 9 credit hours must be completed at the University of Maine.

Contact Information: Kirsten Jacobson, Chair, Department of Philosophy, 5776 The Maples, (207) 581-3848, kirsten.jacobson@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 9 credits at the 100-level.

All minors are required to take one of the following:

- PHI 210 - History of Ancient Philosophy **Credits:** 3
- PHI 221 - Classical Chinese Philosophy **Credits:** 3
- PHI 312 - History of Modern Philosophy **Credits:** 3

And 15 additional credits, at least 9 of which should be courses above the 100 level.

Minor: Physics

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to earn minor: 21

GPA requirements to earn minor: Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.

Other requirements: A minimum of 9 credit hours must be completed at the University of Maine; at least 6 of these 9 credits must be from the Elective courses.

Contact Information: David Clark, Department of Physics, 205 Bennett Hall, (207) 581-1040, 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.

Core Courses (12 credits):

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

Elective Courses: (9 credits)

Minimum of 9 credits chosen from the following list of courses. Up to 3 credits of laboratory courses may be included. Note that many of these courses have prerequisites and/or co-requisites.

- AST 451 - Astrophysics **Credits:** 1-3
- PHY 224 - Special Relativity Laboratory **Credits:** 1 - 3
- PHY 231 - Mathematical Methods in Physics **Credits:** 3
- PHY 241 - Computational Physics **Credits:** 3
- PHY 261 - Physical Measurements Laboratory **Credits:** 2
- PHY 262 - Electronics **Credits:** 2
- PHY 364 - Modern Experimental Physics **Credits:** 2
- PHY 365 - Mechanics Laboratory **Credits:** 2
- PHY 451 - Mechanics **Credits:** 3
- PHY 447 - Molecular Biophysics **Credits:** 3 - 4
- PHY 454 - Electricity and Magnetism I **Credits:** 3
- PHY 455 - Electricity and Magnetism II **Credits:** 3
- 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 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: Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.

Minimum Grade requirements for courses to count toward minor: C-

Other requirements: A minimum of 9 credit hours must be completed at the University of Maine.

Contact Information: Mark Brewer, Professor and Acting Chair, 113a Boudreau Hall, (207)581-1863, mark.brewer@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: Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.

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 Brewer, Professor and Acting Chair of Political Science, (207) 581-1863, mark.brewer@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.

Political Theory Courses

Students must complete 18 credits from the following list:

- 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 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 308 - Liberalism and its Critics **Credits: 3**
- POS 309 - Topics in Political Theory **Credits: 3**
- POS 355 - Music and Politics in the American Context **Credits: 3**

(Choose no more than 3 pre-approved Internship credits)

- 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: 3, 6 or 9**

- 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

GPA requirements to earn minor: Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.

Minimum Grade requirements for courses to count toward minor: None

Other requirements: A minimum of 9 credit hours must be completed at the University of Maine.

Contact Information: Carlos Villacorta, Chair, Associate Professor of Spanish, 201 Williams Hall, (207) 581-2072, carlos.villacorta@maine.edu

Requirements to earn minor: 9 credits in French and 9 credits in Spanish

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 Skills for the Liberal Arts

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to earn minor: 21

GPA requirements to earn minor: Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.

Other requirements: A minimum of 12 credit hours must be completed at the University of Maine.

Contact Information: Timothy M. Cole, Associate Dean for Academics, College of Liberal Arts and Sciences, 105A Stevens Hall, (207) 581-3844, tmcole@maine.edu

This minor is intended as a professional skills-oriented minor for liberal arts majors, focused on the acquisition of knowledge that will enhance their professional opportunities in the earliest years of their careers.

Courses in the Professional Skills for the Liberal Arts minor::

1. Social Psychology

Take one of the following:

- PSY 208 - Theories of Personality **Credits:** 3
- PSY 230 - Social Psychology **Credits:** 3
- PSY 251 - Psychology of Motivation **Credits:** 3

2. Leadership

- LDR 100 - Foundations of Leadership **Credits:** 3

3. Quantitative Skills

Take one of the following:

- PSY 241 - Statistics in Psychology **Credits:** 4
- SOC 219 - Statistical Reasoning in Sociology **Credits:** 3
- STS 132 - Principles of Statistical Inference **Credits:** 3

4. Communication Skills: Public Speaking

Take one of the following:

- CMJ 102 - Fundamentals of Interpersonal Communication **Credits:** 3
- CMJ 103 - Public Speaking **Credits:** 3
- FRE 305 - French Conversation and Composition: Social Issues **Credits:** 3
- SPA 305 - Applied Spanish **Credits:** 3

- Students may have this requirement waived if they achieve a rating of Intermediate (Low, Mid, or High) or higher on the Oral Proficiency Interview (OPI) or the Oral Proficiency Interview by Computer (OPIc) of the American Council on the Teaching of Foreign Languages.

5. Communication Skills: Professional Writing

- ENG 317 - Business and Technical Writing **Credits:** 3

6. Coding

Take one of the following:

- COS 120 - Introduction to Programming I **Credits:** 3
- COS 121 - Coding for Everyone **Credits:** 3
- NMD 105 - Creative Coding I **Credits:** 3

7. Design

Take one of the following:

- ART 110 - 2-D Design **Credits:** 3
- NMD 104 - New Media Design **Credits:** 3

Optional:

- Internship (up to 3 cr.) or Service Learning Course. As approved by the Associate Dean for Academics, CLAS. Examples include:
 - LAS 195 LAS Internship
 - POS 487 SL: Practicum in Engaged Policy Studies I
 - many majors provide internship opportunities for their students.

Minor: Professional Writing

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to earn minor: 18

GPA requirements to earn minor: Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.

Minimum Grade requirements for courses to count toward minor: A "C-" or better is required in all Professional Writing Minor courses.

Other requirements: A minimum of 9 credit hours must be completed at the University of Maine.

Contact Information: Department of English, 581-3822, english.chair@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 201 - Strategies for Writing Across Contexts **Credits:** 3
- ENG 317 - Business and Technical Writing **Credits:** 3
- ENG 415 - Advanced Report & Proposal Writing **Credits:** 3

Electives (9 Credits)

- CMJ 136 - Journalism Writing and Editing **Credits:** 3
- ENG 309 - Writing Creative Nonfiction **Credits:** 3
- ENG 315 - Research Writing in the Disciplines **Credits:** 3
- ENG 395 - Writing Center Internship **Credits:** 3
- ENG 416 - Technical Editing & Document Design **Credits:** 3
- ENG 418 - Topics in Professional Writing **Credits:** 3
- ENG 496 - English Career Internship **Credits:** 3
- 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: Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.

Minimum Grade requirements for courses to count toward minor: "C-" or better

Other requirements: A minimum of 9 psychology credit hours must be completed at the University of Maine.

Contact Information: Ben Guenther, Department of Psychology Undergraduate Coordinator, (207)581-2025, benjamin.guenther@maine.edu

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.

Minor: Religious Studies

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to earn minor: 18

GPA requirements to earn minor: Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.

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.

Other requirements: A minimum of 9 credit hours must be completed at the University of Maine.

Contact Information: Derek A. Michaud, Lecturer, Department of Philosophy and Coordinator of Religious Studies, (207) 581-3890, derek.a.michaud@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**
- CLA 202 - Mythology of the Ancient Near East, North Africa and Greece **Credits: 3**
- HTY 235 - Heresy, Witchcraft, and Reform **Credits: 3**
- HTY 405 - Early Modern Europe: The Age of Reform **Credits: 3**
- JST 200 - Introduction to Judaism **Credits: 3**
- PAX 350 - Buddhism, Peace and Contemplative Traditions **Credits: 3**
- PHI 221 - Classical Chinese Philosophy **Credits: 3**
- PHI 287 - Buddhist Philosophy **Credits: 3**
- PHI 346 - The Philosophy of Mahatma Gandhi **Credits: 3**
- POS 386 - Religion and Politics in the United States **Credits: 3**
- SOC 325 - Sociology of Religion **Credits: 3**

Category II: Courses that focus on religion to a significant degree

- ANT 212 - The Anthropology of Food **Credits: 3**
- ANT 221 - Introduction to Folklore **Credits: 3**
- ANT 252 - Civilization in South Asia **Credits: 3**
- ANT 256 - Ethnic Conflict **Credits: 3**
- ANT 451 - Native American Cultures and Identities **Credits: 3**
- ANT 476 - The Ancient Maya **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 492 - Baroque Research Seminar **Credits: 3**
- ARH 493 - Medieval Research Seminar **Credits: 3**
- ARH 494 - Renaissance Research Seminar **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 202 - Medieval Civilization **Credits: 3**
- HTY 240 - Creation of the Atlantic World, 1450-1888 **Credits: 3**
- HTY 341 - The Making of Modern China **Credits: 3**
- HTY 365 - The American Immigrant Experience **Credits: 3**
- HTY 398 - Historical Issues **Credits: 1-3**
- HTY 402 - Roman History **Credits: 3**
- HTY 403 - Early Middle Ages **Credits: 3**

- HTY 404 - Late Middle Ages **Credits: 3**
- HTY 407 - The Age of Monarchs and Revolution: Europe, 1648-1815 **Credits: 3**
- HTY 411 - The Holocaust **Credits: 3**
- HTY 415 - African-American History **Credits: 3**
- HTY 427 - Vikings! **Credits: 3**
- HTY 437 - History of Modern Japan **Credits: 3**
- HTY 446 - History of Modern Middle East, 1800-Present **Credits: 3**
- HTY 461 - Colonial British America to 1763 **Credits: 3**
- HON 111 - Civilizations: Past, Present and Future I **Credits: 4**
- HON 112 - Civilizations: Past, Present and Future II **Credits: 4**
- JST 205 - Jewish History and Antisemitism from Antiquity to the Founding of the State of Israel **Credits: 3**
- JST 383 - Topics in Judaic Studies **Credits: 3**
- MUH 150 - History of Jazz **Credits: 3**
- MUL 101 - The Art of Listening to Music: Elements **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**
- PSY 230 - Social Psychology **Credits: 3**
- SOC 308 - Problems of Violence and Terrorism **Credits: 3**
- SWK 330 - Contemporary Issues in Diversity and Pluralism **Credits: 3**

Minor: Sociology

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to earn minor: 18

GPA requirements to earn minor: Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.

Minimum Grade requirements for courses to count toward minor: No courses for the Sociology minor may be taken pass/fail.

Other requirements: A minimum of 9 credit hours must be completed at the University of Maine.

Contact Information: Karyn Sporer, Chair, Department of Sociology, Fernald Hall, Room 201G, 207.581.2361, karyn.sporer@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**

Minor: Spanish

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to earn minor: 18

GPA requirements to earn minor: Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.

Minimum Grade requirements for courses to count toward minor: None.

Other requirements: A minimum of 9 credit hours must be completed at the University of Maine.

Contact Information: Carlos Villacorta, Department Chair, Associate Professor of Spanish, 201 Williams Hall, (207) 581-2072, carlos.villacorta@maine.edu

The requirements for a minor in Spanish are a minimum of 18 credits in the language, nine of which must be above the intermediate level. SPA 102 Elementary Spanish II or three credits of SPA 117 Accelerated Spanish I may be counted toward the minor. For more information and a list of available courses, please contact the Department of Modern Languages and Classics in 201 Williams Hall, (207) 581-2072 or (207) 581-2075.

Minor: Statistics

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to earn minor: 16

Minimum Cumulative GPA required to earn minor: Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.

Minimum Grade requirements for courses to count toward minor: C

Other GPA requirements to earn minor: None

Other course requirements: A minimum of 9 credit hours must be completed at the University of Maine. Prerequisites: MAT 126 and MAT 127

Contact Information: Neel Patel, Chair, Mathematics and Statistics, 333 Neville Hall, (207) 581-3901, neel.patel@maine.edu

The statistics minor consists of MAT 228, followed by at least 12 credits of approved statistics courses. Due to content overlap only one of these courses STS 332 and STS 235 can be counted towards the minor. Approved STS courses include:

- STS 235 - Introduction to Statistical Methods Credits: 3
- STS 332 - Statistics for Engineers Credits: 3
- STS 434 - Probability Theory Credits: 3
- STS 435 - Introduction to Mathematical Statistics Credits: 3
- STS 437 - Statistical Methods in Research Credits: 3

Most other 400-level and 500-level STS courses are likely to be approved, when available, and up to 3 credits of approved statistics courses from other departments may be counted towards the minor. Certain MAT courses with statistical content may also be counted. Please contact the department for information on whether a particular course will be approved. STS 132 or 215 do not count towards the minor.

Required Mathematics Course:

- MAT 228 - Calculus III **Credits:** 4

Required Statistics Courses:

- At least 12 credits of approved statistics courses. These may include 3 credits of approved material from another department. Please note that STS 132 and STS 215 do not count for the statistics minor.

Minor: Studio Art

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to earn minor: 21

GPA requirements to earn minor: Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.

Minimum Grade requirements for courses to count toward minor: Students must have a "C - "

Other requirements: A minimum of 9 credit hours must be completed at the University of Maine.

Contact Information: Justin Wolff, Professor & Chair, Department of Art, 107 Lord Hall, (207) 581-3245, justin.wolff@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 360 - Topics in Studio Art **Credits:** 3
- ART 370 - Digital Art II **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: Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.

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 Brewer, Professor and Acting Chair, 113a BoudreauHall, (207) 581-1863, mark.brewer@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: Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.

Minimum Grade requirements for courses to count toward minor: C

Other requirements: A minimum of 9 credit hours must be completed at the University of Maine.

Contact Information: Philip Edelman, Associate Professor, Director of the School of Performing Arts, Class of 1944 Hall, Room 208, 207.581.1257, philip.edelman@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 - Fundamentals of Stagecraft **Credits:** 3
- THE 121 - Stagecraft Laboratory **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: Students graduating with a minor in a CLAS field must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.

Minimum Grade requirements for courses to count toward minor: A C or better for any course to count toward the minor.

Other requirements: A minimum of 9 credit hours must be completed at the University of Maine.

Contact Information: Philip Edelman, Associate Professor, Director of the School of Performing Arts, Class of 1944 Hall, Room 208, 207.581.1257, philip.edelman@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 - Fundamentals of Stagecraft **Credits: 3**
- THE 121 - Stagecraft Laboratory **Credits: 1**
- THE 122 - Introduction to Stagecraft Laboratory II **Credits: 1**
- THE 200 - Fundamentals of Design **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

GPA requirements to earn minor: Students graduating with a minor in a WGS must earn a cumulative GPA of 2.0 or better in the courses in the minor field that are credited toward completion of the minor.

Other requirements: A minimum of 9 credit hours must be completed at the University of Maine. At least six of these 18 credits must be at the 300 level or higher.

Contact Information: Elizabeth Neiman, Director, 422 Chadbourne. Hall, 207.581.3439, elizabeth.neiman@maine.edu

The minor in Women's, Gender, and Sexuality Studies, approved in 1989, is an interdisciplinary program with faculty from a variety of academic units on campus. WGS minors will gain a more complete understanding of how the social construction of gender has influenced the roles, contributions, and experiences of all individuals. Students also explore how gender and sexuality interact with race, social class, dis/ability, nationality, ethnicity, and other sites of social inequality. In providing this robust critical framework, the WGS minor complements and enhances student work in a wide range of disciplines, such as anthropology, biology, English, education, history, nursing, political science, psychology, social work, and sociology. A WGS minor helps prepare students for careers in law, education, business, social services, health services, and government at all levels. At least six of the eighteen credits must be at the 300 level or higher.

Required Course: (9 credits)

- WGS 101 - Introduction to Women's, Gender, and Sexuality Studies **Credits: 3**
Plus two of the following courses:
- WGS 103 - Introduction to Lesbian, Gay, Bisexual, Transgender, and Queer Studies **Credits: 3**
- WGS 205 - Introduction to Feminist and Critical Data Analysis **Credits: 3**
- WGS 206 - Investigating Equity **Credits: 3**
- WGS 230 - Women, Health, and the Environment **Credits: 3**
- WGS 250 - Women and Music **Credits: 3**

- WGS 260 - Gardening as Social Justice **Credits: 3**
- WGS 280 - Intersectionality and Social Movements **Credits: 3**
- WGS 340 - Transnational Feminisms **Credits: 3**
- WGS 410 - Feminist, Gender and Queer Theory **Credits: 3**
- WGS 411 - Internship in Women's, Gender, and Sexuality Studies **Credits: 3**

Electives: (9 credits)

WGS Course Electives:

- WGS 103 - Introduction to Lesbian, Gay, Bisexual, Transgender, and Queer Studies **Credits: 3**
- WGS 201 - Topics in Women's, Gender, and Sexuality Studies **Credits: 3**
- WGS 203 - Men and Masculinities **Credits: 3**
- WGS 205 - Introduction to Feminist and Critical Data Analysis **Credits: 3**
- WGS 206 - Investigating Equity **Credits: 3**
- WGS 230 - Women, Health, and the Environment **Credits: 3**
- WGS 250 - Women and Music **Credits: 3**
- WGS 260 - Gardening as Social Justice **Credits: 3**
- WGS 270 - Gender in Native American Cultures **Credits: 3**
- WGS 280 - Intersectionality and Social Movements **Credits: 3**
- WGS 301 - Intermediate Topics in Women's, Gender, and Sexuality Studies **Credits: 3**
- WGS 303 - Social Movements, Media and Change **Credits: 3**
- WGS 340 - Transnational Feminisms **Credits: 3**
- WGS 351 - Authorizing Women's Sexualities **Credits: 3**
- WGS 360 - Gender and Cinema **Credits: 3**
- WGS 371 - Border-crossing: Gendered Perspectives on Modern Migration **Credits: 3**
- WGS 401 - Advanced Topics in Women's, Gender, and Sexuality Studies **Credits: 3**
- WGS 410 - Feminist, Gender and Queer Theory **Credits: 3**
- WGS 411 - Internship in Women's, Gender, and Sexuality Studies **Credits: 3**

Approved Course Electives:

- ANT 245 - Sex and Gender in Cross-Cultural Perspective **Credits: 3**
- CHF 351 - Human Sexuality **Credits: 3**
- CHF 451 - Family Relationships **Credits: 3**
- CHF 452 - Violence in the Family **Credits: 3**
- CMJ 420 - SL: Health Communication **Credits: 3**
- CRJ 301 - Gender and Crime **Credits: 3**
- CRJ 302 - Race and Crime **Credits: 3**
- CRJ 324 - Domestic Violence **Credits: 3**
- DIS 300 - Disability: Interaction of Human Diversity and Global Environment **Credits: 3**
- DIS 400 - Disability as Diversity I **Credits: 3**
- DIS 450 - Disability: Population-Environment Diversity **Credits: 3**
- ECO 180 - Citizens, Energy & Sustainability **Credits: 3**
- ECO 470 - Independent Capstone **Credits: 3**
- ENG 470 - Topics in Literary Theory and Criticism **Credits: 3**
- MES 350 - Maine Women **Credits: 3**
- MUE 401 - Organization and Administration of Secondary Music Performance Programs **Credits: 3**
- NMD 200 - Designing Humane Tech **Credits: 3**
- NUR 300 - Health Assessment Through the Lifespan **Credits: 3** (for Nursing majors only)

- NUR 413 - Nursing Care Management of Women, Infants and Families **Credits:** 3 (for Nursing majors only)
- NUR 452 - Community and Population Health **Credits:** 3 (for Nursing majors only)
- SOC 310 - Food Systems and Social Change **Credits:** 3
- SOC 324 - Domestic Violence **Credits:** 3
- SOC 340 - Intermediate Topics in Sociology **Credits:** 3
- SWK 330 - Contemporary Issues in Diversity and Pluralism **Credits:** 3
- SWK 380 - The Biological Person and the Environment **Credits:** 3
- SWK 497 - Special Topics in Social Work **Credits:** 1-3
- SPA 415 - Feminism and Literature **Credits:** 3 (taught in Spanish)

Non-Degree Certificates

Certificate of Proficiency: French

A certificate in French requires a minimum of nine credits in the target language, at least three of which must be at the 300-level or above. A grade of C- or better is required for any 300-level or above course to count toward the certificate. Credit by exam may not be counted toward the certificate of proficiency.

Certificate of Proficiency: German

A certificate in German requires a minimum of nine credits in the target language, at least three of which must be at the 300-level or above. A grade of C- or better is required for any 300-level or above course to count toward the certificate. Credit by exam may not be counted toward the certificate of proficiency.

Certificate of Proficiency: Spanish

A certificate in Spanish requires a minimum of nine credits in the target language, at least three of which must be at the 300-level or above. A grade of C- or better is required for any 300-level or above course to count toward the certificate. Credit by exam may not be counted toward the certificate of proficiency.

Maine College of Engineering and Computing

The mission of the University of Maine College of Engineering and Computing is 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 and ethical 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 organizations 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:

Biomedical 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:

Bioinstrumentation
Biomedical Engineering
Computer Engineering

Construction Engineering Technology
Electrical Engineering
Electrical Engineering Technology
Engineering Entrepreneurial
Engineering Leadership and Management
Environmental Engineering
Mechanical Engineering
Mechanical Engineering Technology
Nanotechnology
Ocean and Marine Engineering
Power
Process Engineering
Renewable Energy Engineering
Renewable Energy Sciences and Technology
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 (HV&SC): It is required that engineering and technology students carefully select these electives so that an ethics elective is included within the 18 HV&SC credits required.

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: Students must satisfy the ethics requirements by selecting a Human Values and Social Context (HVSC) elective that also qualifies as an ethics elective. In some majors, students satisfy the ethics requirement by taking courses in their curriculum that satisfy this requirement. For example, Civil and Environmental Engineering majors satisfy the ethics requirement by taking the required CIE 412 - Engineering Ethics.

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 transfer courses for degree credit is performed by the Office of Student Records in consultation with the Dean of the College of Engineering and its Departments, if necessary. Credits from military service will be evaluated on a case by case basis. The University of Maine Equivalency Table is helpful in identifying equivalent courses.

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 Earth, Life and Health Sciences.

Program Contacts*Biomedical Engineering*

Peter van Walsum, Interim Chair
311 Jenness Hall
581-2226
peter.vanwalsum@maine.edu

Chemical Engineering

Peter van Walsum, Interim Chair
311 Jenness Hall
581-2226
peter.vanwalsum@maine.edu

Civil and Environmental Engineering

Shaleen Jain
105A Boardman Hall
581-2170
shaleen.jain@maine.edu

Computer Engineering

Vijaya Devabhaktuni
101 Barrows Hall
581-2243

vijay.devabhaktuni@maine.edu

Construction Engineering Technology

William Manion
114 Machine Tool Lab
581-2184
wmanion@maine.edu

Electrical Engineering

Vijaya Devabhaktuni
101 Barrows Hall
581-2243
vijay.devabhaktuni@maine.edu

Electrical Engineering Technology

Paul Villeneuve
7 Barrows Hall
581-2271
paul.villeneuve@maine.edu

Engineering Physics

MacKenzie Stetzer
117 Bennett Hall
581-1015
umphysicschair@maine.edu

Information - Engineering Programs

Laurie Fullerton
201 Advanced Manufacturing Center
581-2217
musavi@maine.edu

Information - Engineering Technology Programs

Jude Pearse, P.E.
119 Boardman Hall
581-2341
judith.pearse@maine.edu

Mechanical Engineering

Masoud Rais-Rohani
219 Boardman Hall
581-2120
masoud.raisrohani@maine.edu

Mechanical Engineering Technology

Brett Ellis
215A Boardman Hall
581-2134
brett.ellis@maine.edu

Surveying Engineering Technology

Raymond Hintz, P.E.
125 Boardman Hall
581-2189
ray.hintz@maine.edu

Major

Biomedical 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 minimum cumulative GPA of 2.0 in required BEN courses, not including technical electives.

Other Requirements: The Biomedical Engineering program requires that students have a PC-compatible laptop computer capable of running Microsoft Office®, Mathcad®, Labview®, and Solidworks®.

Required Course(s) for fulfilling Capstone Experience: BEN 478 and BEN 479

Contact Information: Peter van Walsum, Interim Chair, 115 Jenness Hall, 581-2277, peter.vanwalsum@maine.edu

The mission of the Biomedical Engineering program reflects the mission of Maine's Land Grant University, specifically to provide teaching, research and public service in the discipline of Biomedical Engineering. 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 Biomedical Engineering. 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 Biomedical Engineering. 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.

Upon completion of the program, our students will have an ability to:

- identify, formulate and solve complex engineering problems by applying principles of engineering, science, and mathematics
- apply engineering design to produce solutions that meet specific needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
- communicate effectively with a range of audiences
- recognize ethical and professional responsibilities in engineering situation and make informed judgments, which must consider the impact of engineering solutions in a global, economic, environmental, and societal contexts
- function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives

- develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.

Program Description

The field of Biomedical Engineering is the intersection of core principles of biology, physics, chemistry, and engineering applied to design devices and techniques to improve human health. For example, Biomedical Engineers might be involved in the design of artificial organs, development of new methods to detect or treat cancer, the design of devices to measure biological agents, or the formulation of materials for the controlled release of drugs and other bioactive molecules to promote desirable physiological responses. Biomedical Engineers work at the forefront of research and industry and frequently address clinical, diagnostic, and therapeutic applications of engineering. Students entering UMaine's Biomedical Engineering 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. <https://umaine.edu/chb/>

UMaine's College of Engineering offers a five-year BS-MBA degree with the Maine Business School as well as a minor in Engineering Leadership and Management. The Department also offers a 4+1 Biomedical Engineering program, yielding a BS-MS degree.

The program in Bioengineering is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>.

Biomedical 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.

Degrees are awarded upon satisfactory completion of 130 credits with a cumulative grade point average of not less than 2.0 in Biomedical Engineering courses.

The program in Bioengineering is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>.

Summer Internships, Undergraduate Research Experiences, and the Cooperative Work Experience Program Option in Biomedical Engineering

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 Biomedical Engineering professors are all highly active and accomplished researchers. Research projects have included the development of nanoprobe 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 research projects 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. Biomedical Engineering CO-OPs range from three to six-months of paid and professionally supervised experience with companies throughout New England. The Co-Op sessions are typically scheduled from July-January, January - July of the junior year or June-August after the completion of the junior year coursework. The exact schedules of the Co-OP sessions are decided by the Co-OP partners. Many students are able to participate in the Co-Op experience and graduate in four years by scheduling coursework during a summer term.

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 professional medical degree programs or other health-related graduate or advanced degree programs (e.g., law, veterinary). For students who wish to pursue advanced postgraduate studies in this area, UMaine also offers a Master of Science degree in Biomedical Engineering (including a 4+1

option), in addition to a Ph.D. in Biomedical Engineering through the Graduate School of Biomedical Sciences and Engineering. <http://gsbse.umaine.edu/>

Scholarships

Many Biomedical Engineering undergraduates enjoy some degree of scholarship support. Students should inquire at the Office of Student Financial Aid to learn about opportunities. Additionally, the following scholarships are offered by the department on a competitive basis:

Eileen M. Byrnes Scholarship
S.T. Han Memorial Scholarship

Required Courses in Suggested Sequence for the B.S. in Biomedical Engineering

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.

NOTE: Incoming students who have credit for MAT 126/127, CHY 121/122/123/124 and PHY 121, will be given the option to waive BEN 111 and 112. It is recommended that Biomedical Engineering students continue to take BEN 112.

First Year - First Semester

- BEN 111 - Introduction to Biomedical Engineering I **Credits: 2**
- CHY 121 - General Chemistry I **Credits: 3**
- CHY 123 - General Chemistry Laboratory I **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

- BEN 112 - Introduction to Biomedical Engineering II **Credits: 2 ***
- BMB 280 - Introduction to Molecular and Cellular Biology **Credits: 3**
- CHY 122 - General Chemistry II **Credits: 3**
- CHY 124 - General Chemistry Laboratory II **Credits: 1**
- MAT 127 - Calculus II **Credits: 4**
- PHY 122 - Physics for Engineers and Physical Scientists II **Credits: 4**

Second Year - First Semester

- BEN 201 - Fundamentals of Biomedical Engineering **Credits: 4 ***
- CHY 251 - Organic Chemistry I **Credits: 3**
- CHY 253 - Organic Chemistry Laboratory I **Credits: 2**
- MAT 228 - Calculus III **Credits: 4**
- ECE 209 - Fundamentals of Electric Circuits **Credits: 3 ***

Second Year - Second Semester

- BEN 202 - Transport Phenomena in Biomedical Systems **Credits: 4 ***
- BIO 208 - Anatomy and Physiology **Credits: 4**
- COS 220 - Introduction to C++ Programming **Credits: 3**
Or
- COS 120 - Introduction to Programming I **Credits: 3**
Or
- COS 125 - Introduction to Problem Solving Using Computer Programming **Credits: 4** (Satisfies core requirement of the Computer Science Minor)
Or
- ECE 177 - Introduction to Programming for Engineers **Credits: 4** (Satisfies core requirement of the Electrical Engineering Minor)
- MAT 258 - Introduction to Differential Equations with Linear Algebra **Credits: 4**
- STS 332 - Statistics for Engineers **Credits: 3 ***

Third Year - First Semester

- BEN 361 - Biomedical Engineering Laboratory I **Credits: 3 ***
- BEN 401 - Dynamic Biomedical Systems **Credits: 3 ***
- BEN 403 - Instrumentation in Biomedical Engineering **Credits: 3 ***
- MEE 252 - Statics and Strength of Materials **Credits: 3 ***
- Human Values and Social Context Elective¹ Credits: 3

Third Year - Second Semester

- BEN 363 - Biomedical Engineering Laboratory II **Credits: 3 ***
- BEN 402 - Biomaterials and the Cellular Interface **Credits: 3 ***
- BMB 322 - Biochemistry **Credits: 3**
- BMB 323 - Biochemistry Laboratory **Credits: 2**
- Approved Technical Elective² Credits: 3
- Human Values and Social Context Elective¹ Credits: 3

Fourth Year - First Semester

- BEN 477 - Elements of Biomedical Engineering Design **Credits: 3 ***
- BEN 478 - Biomedical Engineering Design I **Credits: 2 ***
- BEN 493 - Biomedical Engineering Seminar **Credits: 0-1 ***
- Approved Technical Elective² Credits: 3
- Approved Technical Elective² Credits: 3
- Human Values and Social Context Elective¹ Credits: 3
- Human Values and Social Context Elective¹ Credits: 3

Fourth Year - Second Semester

- BEN 479 - Biomedical Engineering Design II **Credits: 3 ***

- BEN 493 - Biomedical Engineering Seminar **Credits: 0-1 ***
- Approved Technical Elective² **Credits: 3**
- Human Values and Social Context Elective¹ **Credits: 3**
- Human Values and Social Context Elective¹ **Credits: 3**

Total Credits Required for Graduation = 130

Special Requirements

A minimum of **45 credits in engineering topics** is required for graduation. Courses that meet this criteria are indicated with an (*). For transfer students, judicious use of Technical Electives should be employed to meet the minimum number of engineering topic credits.

Ethics

The course sequence BEN 477, BEN 479 and BEN 493 satisfies the University of Maine General Education requirements for ethics. Transfer students who do not complete the sequence of courses should make sure that they satisfy the ethics requirement through their choice of Human Values and Social Context electives.

⁽¹⁾The **Human Values & Social Context Electives (18 credits)** must be selected to meet the University of Maine General Education requirements. These should be selected from a list of approved courses to satisfy each of the five sub-categories: western cultural tradition, social context and institutions, cultural diversity and international perspectives, population and the environment, and artistic and creative expression. Some courses cover more than one sub-category. It is recommended that students consider completing their elective requirements during extra sessions such as summer, winter or May terms. Doing so provides scheduling flexibility for the addition of minors or COOP activities.

⁽²⁾The **Technical Electives (12 credits)** should be upper level (300 level or higher) engineering, mathematics or science courses.

Pre-Approved Technical Electives

A total of **12 credits of approved technical electives** are required for graduation. A total of **45 credits of engineering topics** are also required for graduation. Courses with designators of BEN, BLE, CHE, CIE, ECE, GEE, MEE, or PPA meet the criteria of engineering topics. For transfer students judicious use of Technical Electives should be employed to meet the minimum number of engineering topic credits. In general, 400 level (and higher) courses offered by a science or engineering program but not shown below may, with the Curriculum Committee's approval, be used to satisfy the technical elective requirement. Only approved technical elective courses offered in the College of Engineering may be used to satisfy BOTH the engineering (45) credit and technical elective (12) credit requirements. The following technical elective courses have been pre-approved.

Biochemistry and Molecular Biology

- BIO 335 - Human Anatomy **Credits: 4**
- BIO 336 - Developmental Biology **Credits: 4**
- BIO 377 - Medical Physiology **Credits: 3**
- BIO 378 - Medical Physiology Laboratory **Credits: 2** (*only if with BIO 377*)
- BIO 450 - Histology **Credits: 4**
- BIO 474 - Neurobiology **Credits: 3**

Biochemistry and Molecular Biology

- BMB 400 - Molecular Genetics **Credits: 3**
- BMB 420 - Infectious Disease **Credits: 3**
- BMB 421 - Infectious Disease Laboratory **Credits: 2** (*only if with BMB 420*)

- BMB 440 - Introductory Immunology **Credits: 3**
- BMB 441 - Introductory Immunology Laboratory **Credits: 1** (*only* if with BMB 440)
- BMB 455 - Virology **Credits: 3**
- BMB 456 - Virology Laboratory **Credits: 1** (*only* if with BMB 455)
- BMB 490 - Molecular Genetics Lab **Credits: 3**

Chemical and Biomedical Engineering

- BEN 396 - Research Experience in Biomedical Engineering **Credits: 3**
- BEN 497 - Independent Study **Credits: 3-4**
- BEN 498 - Special Topics in Biomedical Engineering **Credits: 1-3**
- BEN 499 - Undergraduate Thesis **Credits: 1-6**
- BLE 597 - Advanced Topics in Bio Engineering Credits 1-3
- CHE 352 - Process Control **Credits: 3**
- CHE 368 - Kinetics and Reactor Design **Credits: 4**
- CHE 410 - Advanced Materials **Credits: 3**
- CHE 420 - Colloid Technology **Credits: 3**
- CHE 498 - Special Topics in Chemical Engineering **Credits: 1-3**
Special topics in Chemical Engineering
Special topics: Physical Chemistry
- CHE 510 - Transport Phenomena Credits: 3
- CHE 540 - Advanced Chem. Engineering Thermodynamics Credits: 3
- CHE 561 - Advanced Chemical Engineering Kinetics Credits: 3
- CHE 580 - Chemical Engineering Analysis Credits: 3
- CHE 598 - Special Topics in Chemical Engineering Credits: variable

Chemistry

- CHY 431 - Structure and Mechanism in Biological Chemistry **Credits: 3**
- CHY 443 - Instrumental Analysis **Credits: 3**
- CHY 461 - Advanced Inorganic Chemistry I **Credits: 3**
- CHY 472 - Physical Chemistry II **Credits: 3**
- CHY 475 - Physical Chemistry III **Credits: 3**
- CHY 477 - Nanoscience **Credits: 3**

Civil Engineering

- CIE 331 - Fundamentals of Environmental Engineering **Credits: 3**
- CIE 350 - Hydraulics **Credits: 3**
- CIE 533 - Environmental Aquatic Chemistry Credits: 3

Electrical and Computer Engineering

- ECE 177 - Introduction to Programming for Engineers **Credits: 4**
- ECE 314 - Signals and Systems **Credits: 3**
- ECE 457 - Nanoscience **Credits: 3**

- ECE 464 - Microelectronics Science and Engineering **Credits: 3**
- ECE 465 - Introduction to Sensors **Credits: 3**
- ECE 598 - Biomedical Microsystems Credits: 3
- All ECE courses numbered 271 and higher

Honors

- HON 499 - Honors Thesis/Research II **Credits: 3**

Mathematics

- MAT 452 - Complex Analysis **Credits: 3**
- MAT 453 - Partial Differential Equations I **Credits: 3**
- MAT 454 - Partial Differential Equations II **Credits: 3**
- MAT 487 - Numerical Analysis **Credits: 3**
- STS 437 - Statistical Methods in Research **Credits: 3**

Mechanical Engineering

- MEE 230 - Thermodynamics I **Credits: 3**
- MEE 270 - Applied Mechanics: Dynamics **Credits: 3**
- MEE 360 - Fluid Mechanics **Credits: 3**
- MEE 556 - Introduction to Tissue Engineering Credits: 3

Physics

- PHY 236 - Introductory Quantum Physics **Credits: 3**
- PHY 262 - Electronics **Credits: 2**
- PHY 447 - Molecular Biophysics **Credits: 3 - 4**

Pulp and Paper Technology

- PPA 264 - Introduction to the Pulp and Paper Industry **Credits: 3**

Chemical Engineering

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: A cumulative GPA not less than 2.0 in required CHE courses not including technical electives.

Other Requirements: Chemical Engineering program requires that students have a PC-compatible laptop computer capable of running Mathcad ©, Microsoft Office © and Aspen ©. Visit the Maine College of Engineering and Computing website for recommended configuration details.

Required Course(s) for fulfilling Capstone Experience: CHE 479

Contact Information: Peter van Walsum, Interim Chair, 115 Jenness Hall, 581-2277, peter.vanwalsum@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.

Chemical Engineers design, operate and manage processes that transform raw materials into valuable products. In the design and operation of such facilities the optimal outcome supports profitable enterprises while minimizing environmental impact and safety hazards. Since chemical engineers are employed in many different industries, the basic training is general and not industry-specific.

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.

Upon completion of the program, our students will be able to:

- identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
- apply engineering fundamentals to design solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
- communicate effectively with a range of audiences
- recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts

- function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
- develop and conduct appropriate experiments, analyze and interpret data, and use engineering judgment to draw conclusions
- acquire and apply new knowledge as needed, using appropriate learning strategies

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/>

The department offers a concentration for students who are interested in pulp and paper management. 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&poid=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.

The program in Chemical Engineering is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>.

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. Students participating in Co-Op must register for CHE 494, but these credits 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 or specialty chemicals, pharmaceuticals, food processing, 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.

Scholarships

Many Chemical Engineering undergraduates enjoy some degree of scholarship support. Students should inquire at the Office of Student Financial Aid to learn about opportunities. Additionally, the following scholarships are offered by the department on a competitive basis:

Eileen M. Byrnes Scholarship
S.T. Han Memorial Scholarship

In addition, the University of Maine Pulp and Paper Foundation supports many undergraduate students with 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, <https://umaineppf.org/>, 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.

NOTE:

Incoming students who have credit for MAT 126/127, CHY 121/122/123/124 and PHY 121, will be given the option to waive CHE 111 and 112.

First Year - First Semester

- CHE 111 - Introduction to Chemical Engineering I **Credits: 1**
- CHY 121 - General Chemistry I **Credits: 3**
with
- CHY 123 - General Chemistry Laboratory I **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

- CHE 112 - Introduction to Chemical Engineering II **Credits: 3**
- CHY 122 - General Chemistry II **Credits: 3**
with
- CHY 124 - General Chemistry Laboratory II **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

- CHE 350 - Statistical Process Control and Analysis **Credits: 3**
- CHE 385 - Chemical Engineering Thermodynamics I **Credits: 3**
- CHY 252 - Organic Chemistry II **Credits: 3**
- MAT 258 - Introduction to Differential Equations with Linear Algebra **Credits: 4**
- Human Values and Social Context Elective 3 Credits: 3

Third Year - First Semester

- ENG 320 - Technical Communication for Engineering **Credits: 3**
- CHE 352 - Process Control **Credits: 3**
- CHE 360 - Elements of Chemical Engineering I **Credits: 4**
- CHE 386 - Chemical Engineering Thermodynamics II **Credits: 3**

Third Year - Second Semester

- CHE 361 - Chemical Engineering Laboratory I **Credits: 3**
- CHE 362 - Elements of Chemical Engineering II **Credits: 4**
- CHE 368 - Kinetics and Reactor Design **Credits: 4**
- Technical Elective 1 Credits: 3

Fourth Year - First Semester

- CHE 363 - Chemical Engineering Laboratory II **Credits: 3**
- CHE 475 - Process Safety **Credits: 2**
- CHE 477 - Elements of Chemical Engineering Design **Credits: 3**
- CHE 478 - Analysis, Simulation and Synthesis of Chemical Processes **Credits: 3**

- CHE 493 - Chemical Engineering Seminar **Credits:** 0-1
- Human Values and Social Context Elective 4 Credits: 3
- Technical Elective 2 Credits: 3

Fourth Year - Second Semester

- CHE 479 - Chemical Engineering Design Projects **Credits:** 3
- CHE 493 - Chemical Engineering Seminar **Credits:** 0-1
- Human Values and Social Context Elective 5 Credits 3
- Technical Elective 3 Credits:3

Special Requirements:

Approved Technical Electives (9 credits):

The list of preapproved technical electives can be found through a search in the student's Degree Progress Report in MaineStreet. Courses that are not on the list may be used to satisfy the technical elective requirement with prior approval from the department Curriculum Committee.

Ethics

The course sequence CHE 477, CHE 479 and CHE 493 satisfies the University of Maine general education requirement for ethics. Transfer students who do not complete this sequence of courses should make sure that they satisfy the ethics requirement through their choice of General Education Human Values and Social Context electives

Fundamentals of Engineering Examination

Students are encouraged to take the FE examination.

Pulp & Paper Management Certificate Concentration

- ACC 201 - Principles of Financial Accounting **Credits:** 3
- GEE 230 - Introduction to Engineering Leadership and Management **Credits:** 1
- CHE 493 - Chemical Engineering Seminar **Credits:** 0-1
- CHE 494 - Chemical Engineering Practice **Credits:** Ar
- MET 440 - Lean Six Sigma **Credits:** 3 *
- PPA 264 - Introduction to the Pulp and Paper Industry **Credits:** 3 *
- PPA 466 - Paper Technology **Credits:** 3 *

Notes

- These four courses count as pre-approved technical electives for BS in CHE. You will need to select either PPA 465 or PPA 466. Both of these courses are pre-approved tech electives for BS in CHE.
- The 16 credit-hour concentration requirement can double count 9 credits of technical electives.

- The College of Engineering will issue the Lean Six Sigma Certificates.

Pre-approved Technical Electives and Advanced Chemistry Courses

Those courses marked with * can be used as advanced chemistry elective.

Chemical Engineering

- CHE 410 - Advanced Materials **Credits: 3 ***
- CHE 420 - Colloid Technology **Credits: 3 ***
- CHE 430 - Introduction to Polymer Science and Technology **Credits: 3 ***
- CHE 497 - Independent Study **Credits: Ar**
- CHE 498 - Special Topics in Chemical Engineering **Credits: 1-3**
- CHE 510 - Introduction to Transport Phenomena
- CHE 540 - Advanced Chemical Engineering Thermodynamics
- CHE 561 - Advanced Chemical Engineering Kinetics
- CHE 580 - Chemical Engineering Analysis

Bioengineering

- BEN 401 - Dynamic Biomedical Systems **Credits: 3**
- BEN 402 - Biomaterials and the Cellular Interface **Credits: 3**
- BEN 403 - Instrumentation in Biomedical Engineering **Credits: 3**

Biochemistry, Microbiology, and Molecular Biology

- BMB 300 - General Microbiology **Credits: 3**
- BMB 322 - Biochemistry **Credits: 3 ***

Chemistry

- CHY 423 - Introductory Polymer Chemistry **Credits: 3 ***
- CHY 431 - Structure and Mechanism in Biological Chemistry **Credits: 3 ***
- CHY 443 - Instrumental Analysis **Credits: 3 ***
- CHY 461 - Advanced Inorganic Chemistry I **Credits: 3 ***
- CHY 475 - Physical Chemistry III **Credits: 3 ***
- CHY 477 - Nanoscience **Credits: 3 ***
- CHY 483 - Introductory Wood Chemistry **Credits: 3 ***

Civil Engineering

- CIE 331 - Fundamentals of Environmental Engineering **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 455 - Hydrology **Credits: 3**
- CIE 456 - Groundwater Hydrology and Hydraulics **Credits: 3**
- CIE 480 - Wind Energy Engineering **Credits: 3**
- CIE 533* - Environmental Aquatic Chemistry
- CIE 534 - Environmental Microbiology
- CIE 537 - Water Pollution

Computer Science

- COS 220 - Introduction to C++ Programming **Credits: 3**

Electrical and Computer Engineering

- ECE 414 - Feedback Control Systems **Credits: 3**
- ECE 427 - Electric Power Systems **Credits: 4**
- ECE 457 - Nanoscience **Credits: 3**
- ECE 464 - Microelectronics Science and Engineering **Credits: 3**
- ECE 465 - Introduction to Sensors **Credits: 3**
- ECE 467 - Solar Cells and Their Applications **Credits: 3**
- ECE 498 - Selected Topics in Electrical and Computer Engineering **Credits: 1-3**

Electrical Engineering Technology

- EET 321 - Electro-Mechanical Energy Conversion **Credits: 4**
- EET 460 - Renewable Energy and Electricity Production **Credits: 3**

Food Science and Nutrition

- FSN 330 - Introduction to Food Science **Credits: 3**
- FSN 482 - Food Chemistry **Credits: 3**

Honors

- HON 499 - Honors Thesis/Research II **Credits: 3**

Interdisciplinary Studies

- INT 489 - Advanced Topics in Interdisciplinary Studies **Credits: 1-99**

Mathematics

- MAT 400 - Topics in Mathematics **Credits: 1-3** (Topics in Fractals & Wavelets)
- 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 487 - Numerical Analysis **Credits: 3**
- STS 435 - Introduction to Mathematical Statistics **Credits: 3**
- STS 437 - Statistical Methods in Research **Credits: 3**

Mechanical Engineering

- MEE 320 - Materials Engineering and Science **Credits: 3**
- MEE 433 - Solar-Thermal Engineering **Credits: 3**
- MEE 475 - Fuel Cell Science and Technology **Credits: 3**
- MEE 480 - Wind Energy Engineering **Credits: 3**
- MEE 484 - Power Plant Design and Engineering **Credits: 3**
- MEE 486 - Refrigeration and Air Conditioning System Design **Credits: 3**
- MEE 555 - Smart Materials
- MEE 556 - Introduction to Tissue Engineering

Mechanical Engineering Technology

- MET 391 - Heating, Ventilating and Air Conditioning **Credits: 3**
- MET 440 - Lean Six Sigma **Credits: 3**
- MET 475 - Fuel Cell Science and Technology **Credits: 3**

Physics

- PHY 447 - Molecular Biophysics **Credits: 3 - 4**

Pulp and Paper Technology

- PPA 264 - Introduction to the Pulp and Paper Industry **Credits: 3**
- PPA 466 - Paper Technology **Credits: 3**

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: A minimum cumulative GPA of 2.0 in CIE courses.

Required Course(s) for fulfilling Capstone Experience: CIE 411, 413

Contact Information: Shaleen Jain, Professor and Chair, 5711 Boardman Hall, Room 105, Tel: (207) 581-2170, email: shaleen.jain@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, <http://www.abet.org>. The program currently grants 50-60 BS degrees per year, and our present undergraduate enrollment is about 270 students. Annual student enrollment data can be found at <https://umaine.edu/oir/majors-report/>, and information on degrees granted is posted at <https://umaine.edu/oir/degrees-conferred/>.

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

- CMJ 103 - Public Speaking **Credits: 3**
- 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**

Second Year - Second Semester

- CIE 225 - Transportation Engineering **Credits: 3**

- 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)
- Human Values and Social Context Elective Credits 3 (footnote 1)

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
- ENG 320 - Technical Communication for Engineering **Credits:** 3
- Human Values and Social Contexts 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)
- 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:** 3
(footnote 2,6)
- CIE 413 - SL: 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)

Fourth Year - Second Semester

- CIE 411 - SL: Engineering Project Design **Credits:** 3
- Civil Engineering Elective Credits: 3 (footnotes 3 and 4)
- Civil Engineering or Technical Elective Credits: 3 (footnotes 3 and 1)
- Human Values and Social Context Elective Credits: 3 (footnote 1)

Concentrations

Concentrations may be completed in Environmental Engineering, Water Resources Engineering, Structural Engineering, and Transportation Engineering. Students desiring a concentration must declare it with the Civil and Environmental Engineering

Department before the start of their final semester. To earn a concentration, a student must complete three 400-level electives with a grade of C or better in the concentration area as defined below.

Environmental Engineering

- CIE 430 - Water Treatment **Credits: 4**
- CIE 434 - Wastewater Process Design **Credits: 4**
- CIE 431 - Pollutant Fate and Transport **Credits: 4**
or
- CIE 439 - Solid Waste and Air Pollution **Credits: 3**

Water Resources Engineering

- CIE 450 - Open Channel Hydraulics **Credits: 3**
- CIE 455 - Hydrology **Credits: 3**
- CIE 456 - Groundwater Hydrology and Hydraulics **Credits: 3**

Structural Engineering

- CIE 440 - Structural Analysis I **Credits: 4**
- CIE 442 - Structural Design I **Credits: 4**
- CIE 443 - Structural Design II **Credits: 4**

Transportation Engineering

- CIE 424 - Urban Transportation Planning **Credits: 3**
- CIE 425 - Transportation Safety **Credits: 3**
- CIE 426 - Advanced Roadway Design **Credits: 3**
- CIE 428 - Pavement Analysis and Design **Credits: 3**

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). Courses used for credit as an Approved Science Elective or Technical Elective and ENG 320 cannot be used for credit in the Human Values and Social Contexts area, but can be used to fulfill HVSC sub-categories such as Population and the Environment.

2. General education requirements mandate two writing intensive courses. CIE 412 is designated as writing intensive course within the CIE major, while ENG 320 meets the outside the major writing intensive course.

3. Civil Engineering and technical electives must be a minimum of 21 credit hours with no more than two technical elective courses (6 credits maximum). 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. A list of technical electives is available in the department and undergraduate student guide.

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, BIO 122/BIO 123 Biology: The Living Science, ERS 101 Introduction to Geology, ERS 102 Environmental Geology of Maine, SMS 302/303 Oceanography, and EES 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 428	3	0	Transportation
CIE 430	3	1	Environmental
CIE 431	3	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 480		3	
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 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.

Required Course(s) for fulfilling Capstone Experience: ECE 403

Contact Information: Vijaya Devabhaktuni, Professor and Chair, Electrical and Computer Engineering, 101 Barrows Hall, (207) 581-222; vijay.devabhaktuni@maine.edu

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.

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, <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 - Public Speaking **Credits: 3**
(Note: Counts towards HV&SC requirement as well. The CMJ 103 course requirement is waived for students completing HON 111, HON 112, HON 211, HON 212, HON 170, and HON 180.)
- 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**
(Students may elect to take MAT 259 and MAT 262 as an alternative to taking MAT 258. This substitution is encouraged for students pursuing a Minor in Mathematics.)

- MAT 481 - Discrete Mathematics **Credits: 3**
or
- COS 250 - Discrete Structures **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 I **Credits: 3**
- ECE 214 - Electric Circuits II **Credits: 4**
- ECE 271 - Microcomputer Architecture and Applications **Credits: 4**
- 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
- CHE 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: 2**
(Students with a primary degree in Electrical Engineering who have declared Computer Engineering as a second degree may replace ECE 405 with ECE 401.)
- ECE 406 - Computer Engineering Design Project **Credits: 4**
(Students with a primary degree in Electrical Engineering who have declared Computer Engineering as a second degree may replace ECE 406 with ECE 402.)
- 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**

Technical Electives

The Bachelor of Science in Computer Engineering requires at least 19 credits of technical electives, of which 16 or more credits must meet the requirements of a "ECE/COS Technical Elective". Of the ECE/COS Technical Electives, 10 or more credits must satisfy the requirements of a "Computer Focus Technical Elective".

Technical Electives are courses that are not used to satisfy other degree requirements that fall into the following three categories:

1. "Computer Focus Technical Electives" include:

a. Specific ECE Courses that have been approved as "Computer Focus" by ECE faculty. A list of approved courses is available in the ECE department. Examples of approved Computer Focus Technical Electives are:

- ECE 417 - Mobile Robotics Credits: 3
- ECE 435 - Network Engineering Credits: 3
- ECE 471 - Embedded Systems Credits: 3
- ECE 477 - Hardware Applications Using C Credits: 3
- ECE 478 - Industrial Computer Control Credits: 3
- ECE 490 - Neural Networks Credits: 3
- ECE 533 - Advanced Robotics Credits: 3
- ECE 571 - Advanced Microprocessor-Based Design Credits: 3
- ECE 573 - Microprogramming Credits: 3

- ECE 574 - Cluster Computing Credits: 3
 - ECE 577 - Fuzzy Logic Credits: 3
 - ECE 590 - Neural Networks Credits: 3
- b. All COS courses at the 300, 400, or 500 level, excluding COS 397, COS 495, COS 497, and COS 499.

2. "ECE/COS Technical Electives include:

- a. All Computer Focus Technical Electives
- b. All other ECE courses at the 300, 400, or 500 level, excluding ECE 394

3. "Generic Technical Electives" which include:

- a. All "ECE/COS Technical Electives" and "Computer Focus" Technical Electives
- b. Any 300, 400, or 500 level course with one of the following designations: ECE, COS, CHY, PHY, BIO, BMB, BEN, CHE, CIE, GEE, MAT, STS, or Business course.
- c. A list of additional courses that have been approved by ECE faculty which do meet the above description is available in the ECE department.

Construction Engineering Technology

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: C or higher in MAT 116 and MAT 122

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

Course satisfying the writing intensive requirement within the major: CET 356

Contact Information: Phil Dunn, 132 Boardman, (207)581-2326, philip.dunnjr@maine.edu

The Construction Engineering Technology (CET) program develops engineering and professional skills in students who aspire to facilitate construction projects. Our graduates have the ability to work in all stages of the building and infrastructure project lifecycle, from design and planning through construction, operations and maintenance. Key skills include:

- Practical problem solving
- Communication and collaboration with designers, engineers, owners and the public
- Construction engineering judgment
- An appreciation for community service and the value of our infrastructure

Program highlights

- Service learning construction projects to give back to the community
- Connections to summer employment in the industry
- Development of professional culture
- The ability to eventually become a professional engineer (PE)

In addition to University-wide general education requirements, the program provides instruction in a number of specific curricular areas. Students are expected to learn how to:

- Utilize techniques that are appropriate to administer and evaluate construction contracts, documents, and codes
- Estimate costs, estimate quantities, and evaluate materials for construction projects
- Utilize measuring methods, hardware and software that are appropriate for field, laboratory, and office processes that are related to construction
- Apply fundamental computational methods and elementary analytical techniques in sub-disciplines related to construction engineering
- Produce and utilize design, construction and operations documents
- Perform economic analyses and cost estimates related to design, construction, and maintenance of systems associated with construction engineering
- Select appropriate construction materials and practices
- Apply appropriate principles of construction management, law, and ethics
- Perform standard analysis and design in at least one sub-discipline related to construction engineering

Program Educational Objectives

The program educational objectives are to prepare students such that they can continue to enhance their abilities developed in the program as defined by the following **student outcomes**:

Prior to graduation, students are required to demonstrate the following learned capabilities:

1. An ability to apply knowledge, techniques, skills, and modern tools of mathematics, science, engineering, or technology to solve broadly-defined construction engineering problems.
2. An ability to design systems, components or processes for broadly-defined construction methods, operations and schedules.
3. An ability to apply written, oral, and graphical communication in broadly-defined technical and non-technical environments; and an ability to identify and use appropriate technical literature;
4. An ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results to improve processes in construction; and
5. An ability to function effectively as a member or leader of a multidisciplinary construction team.

Degrees are awarded upon satisfactory completion of 120 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 including SVT 121. The Construction Engineering Technology (CET) program is accredited by the Engineering Technology Accreditation Commission of ABET, <https://www.abet.org>.

Computers

All students are required to have a laptop computer. Visit our website (umaine.edu/set) for recommended configuration details.

Employment Opportunities

With a Bachelor of Science degree, graduates are prepared to perform technical and supervisory tasks in the field and office, and then advancing to management positions. Prospective employers include construction contractors and subcontractors, private and public construction monitoring agencies, contract administrators, and major facility owners such as the Department of Transportation. There are also similar employment opportunities in other project-oriented industries, such as aircraft, aerospace, and shipbuilding.

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 Engineering Technology **Credits: 1**
- CMJ 103 - Public Speaking **Credits: 3** ¹
- MAT 116 - Introduction to Calculus **Credits: 3**
- PHY 107 - Technical Physics I **Credits: 4**
- SVT 121 - AutoCAD and Cartography for Surveyors I **Credits: 3**

First Year - Second Semester

- CET 101 - Plane Surveying **Credits: 3**
- ENG 101 - College Composition **Credits: 3**
- MAT 117 - Applications of Calculus **Credits: 3**
- PHY 108 - Technical Physics II **Credits: 4**

- HVSC Elective (CD&IP) Credits: 3¹

Second Year - First Semester

- CET 202 - Construction Layout **Credits: 3**
- CET 228 - Introduction to Construction Estimating and Planning **Credits: 3**
- CIE 110 - Materials **Credits: 3**
- CIE 111 - Materials Laboratory **Credits: 1**
- PSY 100 - General Psychology **Credits: 3**
- HVSC Elective (WC) Credits: 3¹

Second Year - Second Semester

- CET 221 - Construction Methods **Credits: 4**
- CET 224 - Construction Safety **Credits: 3**
- ECO 120 - Principles of Microeconomics **Credits: 3**
Or
- ECO 121 - Principles of Macroeconomics **Credits: 3**¹
- STS 215 - Introduction to Statistics for Business and Economics **Credits: 3**
Or
- STS 132 - Principles of Statistical Inference **Credits: 3**
- HVSC Elective (A&C) Credits: 3¹

Third Year - First Semester

- ACC 201 - Principles of Financial Accounting **Credits: 3**
- CET 325 - Construction Estimating **Credits: 3**
- CET 326 - Soil Mechanics and Foundations **Credits: 3**
- CET 327 - Soil Mechanics and Foundations Laboratory **Credits: 1**
- ENG 317 - Business and Technical Writing **Credits: 3**
- MGT 220 - The Legal Environment of Business **Credits: 3**

Third Year - Second Semester

- CET 332 - Civil Infrastructure **Credits: 3**
- CET 356 - Construction Project Administration **Credits: 3**
- CET 360 - Preconstruction Services **Credits: 4**
- CET 413 - Statics and Strength of Materials **Credits: 4**

Fourth Year - First Semester

- CET 414 - Structural Design **Credits: 4**
- CET 458 - SL: Management of Construction **Credits: 3**

- CET 462 - Construction Planning and Scheduling **Credits: 3**
- Construction Elective Credits: 3
- Technical Elective Credits: 3

Fourth Year - Second Semester

- CET 412 - Sustainable Population and Environmental Design and Construction **Credits: 3**¹
- EET 484 - Engineering Economics **Credits: 3**¹
- Construction Elective Credits: 3
- Technical Elective Credits: 3

Students must see their advisors for approval of all electives

¹The Human Values and Social Context (HVSC) general education requirements are a minimum of 18 credits covering five areas: 1. Western cultural tradition; 2. Social context and institutions (covered with CMJ 103, ECO 120 or 121, MGT 220, PSY 100, or EET 484); 3. Cultural diversity and international perspectives; 4. Population and the environment (covered with CET 412); and 5. Artistic and creative expression; 6. Ethics (covered with EET 484). For more detail about the General Education Requirements, see General Education Requirements.

Technical Electives

The following courses are approved technical electives for the CET program. Other courses are not listed by number and name below must be approved by an advisor to count as a construction elective. Courses that are substantially the same as another technical elective or required course will not be approved.

- ACC XXX
- CET 394
- CET 395
- CIE XXX
- EET XXX
- ERS XXX
- FIN XXX
- INV XXX
- MEE XXX
- MET XXX
- MGT 2XX

Construction Electives

The following courses are approved construction electives for the CET program. Other courses are not listed by number and name below must be approved by an advisor to count as a construction elective. Courses that are substantially the same as another technical elective or required course will not be approved.

- CET 425 - Virtual Design and Construction **Credits: 3**
- CET 426 - Heavy Construction QA **Credits: 3**
- CET 455 - Construction Engineering Fundamentals **Credits: 3**
- CET 498 - Selected Topics in Construction Engineering Technology **Credits: Ar**
- SVT 475 - Small Business Management **Credits: 3**

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: Vijaya Devabhaktuni Professor and Chair, Electrical and Computer Engineering, 101 Barrows Hall, (207) 581-2224, vijay.devabhaktuni@maine.edu

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.

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 electrical 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, <http://www.abet.org>.

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 - Public Speaking **Credits: 3**
(Note: Counts towards HV&SC requirement as well. The CMJ 103 course requirement is waived for students completing HON 111, HON 112, HON 211, HON 212, HON 170, and HON 180.)
- CHY 131 - Chemistry for Civil, Electrical and Mechanical Engineers **Credits: 3**
(Students may substitute CHY 121 for CHY 131)
- CHY 133 - Chemistry for Civil, Electrical and Mechanical Engineers Laboratory **Credits: 1**
(Students may substitute CHY 123 for CHY 133)
- 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**
(Students may elect to take MAT 259 and MAT 262 as an alternative to taking MAT 258. This substitution is encouraged for students pursuing a Minor in Mathematics.)
- 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 I **Credits: 3**
- ECE 214 - Electric Circuits II **Credits: 4**
- ECE 271 - Microcomputer Architecture and Applications **Credits: 4**
- 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
- CHE 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: 2**
(Students with a primary degree in Computer Engineering who have declared Electrical Engineering as a second degree may replace ECE 401 with ECE 405)
- ECE 402 - Electrical Engineering Design Project **Credits: 4**
(Students with a primary degree in Computer Engineering who have declared Electrical Engineering as a second degree may replace ECE 402 with ECE 406)
- ECE 403 - Electrical and Computer Engineering Design Project **Credits: 2**
- ECE 414 - Feedback Control Systems **Credits: 3**
- ECE 486 - Digital Signal Processing **Credits: 4**

Technical Electives

The Bachelor of Science in Electrical Engineering requires at least 21 credits of technical electives, of which 15 or more credits must be the requirements of an "ECE Technical Elective". Of the ECE Technical Electives, 9 or more credits must satisfy the requirements of a "Electrical Engineering Focus Technical Elective".

Technical Electives are courses that are not used to satisfy other degree requirements that fall into the following three categories:

1. "Electrical Engineering Focus Technical Electives" include

Specific ECE Courses that have been approved as "Electrical Engineering Focus" by ECE faculty. A list of approved courses is available in the ECE department. Examples of approved Electrical Engineering Focus Technical Electives are:

- ECE 323 - Electric Power Conversion Credits: 3
- ECE 427 - Electric Power Systems Credits: 4
- ECE 444 - Analog Integrated Circuits Credits: 3
- ECE 445 - Analysis and Design of Digital Integrated Circuits Credits: 3
- ECE 450 - Power Electronics Credits: 3
- ECE 453 - Microwave Engineering Credits: 4
- ECE 457 - Nanoscience Credits: 3
- 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 466 - Sensor Technology and Instrumentation Credits: 4
- ECE 467 - Solar Cells and Their Applications Credits: 3
- ECE 484 - Communications Engineering Credits: 3
- ECE 543 - Microelectronic Devices I Credits: 3
- ECE 547 - VLSI Design/Layout Credits: 3
- ECE 548 - VLSI Test/Characterization Credits: 1
- ECE 550 - Electromagnetic Theory Credits: 3
- ECE 552 - Wave Propagation Credits: 3
- ECE 565 - Solid State Device Theory I Credits: 3

- ECE 581 - Estimation and Detection Theory Credits: 3
- ECE 583 - Coding Theory Credits: 3
- ECE 584 - Estimation Theory Credits: 3
- ECE 585 - Fundamentals of Wireless Communication Credits: 3

2. "ECE Technical Electives include:

- All Electrical Engineering Focus Technical Electives
- all other ECE courses at the 300, 400, or 500 level, excluding ECE 394.

3. "Generic Technical Electives" which include:

- All "ECE Technical Electives" and "Electrical Engineering Focus" Technical Electives
- An 300, 400 or 500 level course with one of the following designations: ECE, COS, CHY, PHY, BIO, BMB, BEN, CHE, CIE, GEE, MAT, STS, or any Business course.
- A list of additional courses that have been approved by ECE faculty which do meet the above description is available in the ECE department.

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: 4**

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: 120

Minimum Cumulative GPA required to graduate: 2.0

Minimum Grade requirements for courses to count toward major: The math sequence (MAT122, MAT126, MAT127) requires a "C" or better in each class to move to the next class. ENG 101 requires a C

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

Courses satisfying the writing intensive requirement within the major: EET 100 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 equipment, internship experience and design project experience.
- To prepare students in the business of engineering through the understanding of economic and business principles and effective project management techniques.
- To prepare students for the increasing use of computer based technology in 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 applications 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 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, statistics 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 with additional lab assistant support to promote learning as required. 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 sequence that is spread over three semesters finishing in their senior year. Design projects are required in some of the EET courses to help 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 120 credits in either the EET Option, IT Option, or Electro-Mechanical 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 Electrical Engineering Technology (EET) program is accredited by the Engineering Technology Accreditation Commission of ABET, <https://www.abet.org>.

Student Outcomes

Prior to graduation, students are required to demonstrate the following learned capabilities:

1. the application of circuit analysis and design, computer programming, associated software, analog and digital electronic and microcomputers, and engineering standards to the building, testing, operation, and maintenance of electrical/electronic(s) systems;
2. the application of natural sciences and mathematics at or above the level of algebra and trigonometry to the building, testing, operation, and maintenance of electrical/electronic systems;
3. the ability to analyze, design, and implement one or more of the following: control systems, instrumentation systems, communications systems, computer systems, or power systems;
4. the ability to apply project management techniques to electrical/electronic(s) systems; and
5. the ability to utilize differential and integral calculus, as a minimum, to characterize the performance of electrical/electronic systems.

Electromechanical Option

Students seeking a degree that provides the knowledge and skills to understand how electrical and mechanical components and systems function together. Systems continue to evolve requiring more electrical actuators to work autonomously. Students will take several core mechanical engineering technology courses that provide a solid foundation for mechanical systems. Required electrical engineering technology courses will focus on the application of electricity and electronics to interface with mechanical systems.

Information Engineering Technology Option and Minors

Students who wish to pursue the degree but gain extra experience in computer and data networking applications may pursue an option in information technology. To achieve this option 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, or business administration.

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 testing energy systems. EET graduates are the electrical back-bone of the utility industry and often manage electricians, cad operators, and engineers. Many in-state and out-of-state companies rely on our graduates to fill positions to 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: 4**
- ENG 101 - College Composition **Credits: 3**
- MAT 122 - Pre-Calculus **Credits: 4**
- PHY 107 - Technical Physics I **Credits: 4**

First Year - Second Semester

- EET 111 - Circuit Analysis I **Credits: 4**
- EET 115 - Creative Design Using CAD **Credits: 3**
- MAT 126 - Calculus I **Credits: 4**
- PHY 108 - Technical Physics II **Credits: 4**

Second Year - First Semester

- EET 241 - Analog Circuit Fundamentals **Credits: 4**
- EET 275 - Digital Communications **Credits: 4**
- EET 276 - Programmable Logic Controllers **Credits: 4**
- MAT 127 - Calculus II **Credits: 4**

Second Year - Second Semester

- CMJ 103 - Public Speaking **Credits: 3**
- EET 274 - Introduction to Microcontrollers **Credits: 4**
- EET 342 - Advanced Analog Circuit Design **Credits: 4**
- Technical Elective **Credits: 3**

Electrical Engineering Technology Options

Electrical Engineering Technology Option:

Third Year - First Semester

- EET 312 - Circuit Analysis II **Credits: 4**

- EET 324 - Network Analysis and Applications **Credits: 4**
- ENG 317 - Business and Technical Writing **Credits: 3**
- EET 460 - Renewable Energy and Electricity Production **Credits: 3**

Third Year - Second Semester

- 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**
- EET 486 - Project Management **Credits: 3**
- Technical Elective Credits: 3

Fourth Year - First Semester

- EET 422 - Power Systems Analysis **Credits: 4**
- EET 405 - Fundamentals of Engineering: Electrical and Computer **Credits: 3**
- EET 451 - Senior Design Project II **Credits: 2**
- MET 433 - Thermodynamics **Credits: 3**
- Western Cultural Tradition Elective¹ Credits: 3

Fourth Year - Second Semester

- EET 452 - Senior Design Project III **Credits: 1**
- EET 484 - Engineering Economics **Credits: 3**³
- Cultural Diversity and International Perspectives Elective¹ Credits: 3
- Population and the Environment Elective¹ Credits: 3
- EET Technical Elective Credits: 3
- Technical Elective Credits: 3
- Fundamentals of Engineering Exam (passing not required)

Students must see their advisor for approval of all electives.

¹General Education Requirement Elective requirements can be viewed on MaineStreet.

² CHE 350 or STS 332 may be substituted for STS 132

³ EET 484 meets the Ethics and Human Values/Social Context requirements.

Information Engineering Technology Option:

Third Year - First Semester

- COS 220 - Introduction to C++ Programming **Credits: 3**
- EET 312 - Circuit Analysis II **Credits: 4**
- EET 324 - Network Analysis and Applications **Credits: 4**
- EET 486 - Project Management **Credits: 3**

- ENG 317 - Business and Technical Writing **Credits: 3**

Third Year - Second Semester

- EET 350 - Senior Design Project I **Credits: 1**
- STS 132 - Principles of Statistical Inference **Credits: 3**²
- IT Elective 1** **Credits: 3**
- IT Elective 2** **Credits: 3**
- Population and the Environment Elective¹ **Credits: 3**
- Technical Elective

Fourth Year - First Semester

- EET 415 - Automation and Integration **Credits: 3**
- EET 451 - Senior Design Project II **Credits: 2**
- MET 433 - Thermodynamics **Credits: 3**
- IT Elective 3** **Credits: 3**
- IT Elective 4** **Credits: 3**

Fourth Year - Second Semester

- EET 452 - Senior Design Project III **Credits: 1**
- EET 484 - Engineering Economics **Credits: 3**³
- Cultural Diversity Elective¹ **Credits: 3**
- Western Cultural Traditions Elective¹ **Credits: 3**
- EET Technical Elective **Credits: 3**

Students must see their advisor for approval of all electives.

- A list of approved courses that meet the Technical Electives are available in 119 Boardman Hall.
- ¹General Education Requirement Electives do not have to be taken in the order shown. Courses that meet the General Education Elective requirements can be viewed on MaineStreet.
- ²CHE 350 or STS 332 may be substituted for STS 132
- ³EET 484 meets the Ethics and Human Values/Social Context requirements.

Approved Information Technology (IT) Electives

- BIS 363 - Information Security Management **Credits: 3**
- COS 120 - Introduction to Programming I **Credits: 3**
- COS 125 - Introduction to Problem Solving Using Computer Programming **Credits: 4**
- COS 140 - Foundations of Computer Science **Credits: 3**
- COS 221 - Data Structures in C++ **Credits: 3**
- COS 225 - Object-Oriented Design, Programming and Data Structures **Credits: 3**
- COS 226 - Introduction to Data Structures and Algorithms **Credits: 3**
- COS 235 - Computer Architecture **Credits: 3**
- COS 250 - Discrete Structures **Credits: 4**

- COS 331 - Operating Systems **Credits: 3**
- COS 415 - Computer Simulation and Modeling, from Development to Display **Credits: 3**
- COS 420 - Introduction to Software Engineering **Credits: 3**
- COS 440 - Computer Networks I **Credits: 3**
- ECE 331 - Introduction to Unix Systems Administration **Credits: 3**
- ECE 417 - Mobile 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**
- EET 414 - Printed Circuit Board Design **Credits: 3**
- NMD 342 - Interaction Design and Physical Computing **Credits: 3**

Electromechanical Engineering Technology Option:

First Year - First Semester

- EET 100 - Introduction to Electrical Engineering Technology **Credits: 4**
- ENG 101 - College Composition **Credits: 3**
- MAT 122 - Pre-Calculus **Credits: 4**
- PHY 107 - Technical Physics I **Credits: 4**

First Year - Second Semester

- EET 111 - Circuit Analysis I **Credits: 4**
 - EET 115 - Creative Design Using CAD **Credits: 3 ***
 - MAT 126 - Calculus I **Credits: 4**
 - PHY 108 - Technical Physics II **Credits: 4**
- *EET 115 also meets the Artistic and Creative Expression requirement

Second Year - First Semester

- EET 241 - Analog Circuit Fundamentals **Credits: 4**
- EET 274 - Introduction to Microcontrollers **Credits: 4**
- EET 276 - Programmable Logic Controllers **Credits: 4**
- MAT 127 - Calculus II **Credits: 4**

Second Year - Second Semester

- CMJ 103 - Public Speaking **Credits: 3**
- EET 342 - Advanced Analog Circuit Design **Credits: 4**
- MAT 258 - Introduction to Differential Equations with Linear Algebra **Credits: 4**
- MET 150 - Statics **Credits: 3**

Third Year - First Semester

- EET 312 - Circuit Analysis II **Credits: 4**
- EET 486 - Project Management **Credits: 3**
- ENG 317 - Business and Technical Writing **Credits: 3**
- MET 219 - Strength of Materials **Credits: 3**
- MET 317 - Dynamics **Credits: 3**

Third Year - Second Semester

- EET 274 - Introduction to Microcontrollers **Credits: 4**
- EET 321 - Electro-Mechanical Energy Conversion **Credits: 4**
- EET 350 - Senior Design Project I **Credits: 1**
- STS 132 - Principles of Statistical Inference **Credits: 3**
- Technical Elective Credits: 3

Fourth Year - First Semester

- EET 324 - Network Analysis and Applications **Credits: 4**
- EET 451 - Senior Design Project II **Credits: 2**
- MET 433 - Thermodynamics **Credits: 3**
- Technical Elective Credits: 3
- Western Cultural Tradition Elective¹ Credits: 3

Fourth Year - Second Semester

- EET 325 - Design and Applications of Control Systems **Credits: 4**
- EET 484 - Engineering Economics **Credits: 3**³
- STS 132 - Principles of Statistical Inference **Credits: 3**
- Cultural Diversity & International Perspectives Elective Credits: 3

Students must see their advisor for approval of all electives

- A list of approved courses that meet the Technical Electives are available in 119 Boardman Hall.
- ¹General Education Requirement Electives do not have to be taken in the order shown. Courses that meet the General Education Elective requirements can be viewed on MaineStreet.
- ² CHE 350 or STS 332 may be substituted for STS 132
- ³ EET 484 meets the Ethics and Human Values/Social Context requirements.

Electrical Engineering Technology Electives

Technical electives include any related technical courses which support the student's career interest. EET students are required to complete 12 credit hours in technical electives as part of the requirements for the BS/EET Degree. The following is a list of approved technical electives. No course will be approved if its subject matter is substantially a repeat of a course you have already taken or will take. Students should always consult their advisor when registering for technical electives.

Technical Electives

- ACC 201 - Principles of Financial Accounting **Credits: 3**
- ACC 202 - Principles of Managerial Accounting **Credits: 3**
- ACC 305 - Cost Accounting **Credits: 3**
- AST 109 - Introduction to Astronomy **Credits: 3**
- AST 221 - Planetary Systems **Credits: 3**
- AST 227 - Stars and Galaxies **Credits: 3**
- BIO 100 - Basic Biology **Credits: 4**
- CET 101 - Plane Surveying **Credits: 3**
- CET 413 - Statics and Strength of Materials **Credits: 4**
- CHE 352 - Process Control **Credits: 3**
- CHY 121 - General Chemistry I **Credits: 3**
and
- CHY 123 - General Chemistry Laboratory I **Credits: 1**
- CHY 122 - General Chemistry II **Credits: 3**
and
- CHY 124 - General Chemistry Laboratory II **Credits: 1**
- CHY 131 - Chemistry for Civil, Electrical and Mechanical Engineers **Credits: 3**
and
- CHY 133 - Chemistry for Civil, Electrical and Mechanical Engineers Laboratory **Credits: 1**
- CIE 110 - Materials **Credits: 3**
and
- CIE 111 - Materials Laboratory **Credits: 1**
- CIE 350 - Hydraulics **Credits: 3**
- COS 120 - Introduction to Programming I **Credits: 3**
- COS 220 - Introduction to C++ Programming **Credits: 3**
- COS 221 - Data Structures in C++ **Credits: 3**
- COS 301 - Programming Languages **Credits: 3**
- COS 440 - Computer Networks I **Credits: 3**
- COS 454 - Data Structures and Algorithms **Credits: 3**
- COS 460 - Interactive Computer Graphics **Credits: 3**
- ECE 471 - Embedded Systems **Credits: 3**
- ECE 477 - Hardware Applications Using C **Credits: 3**
- ECO 120 - Principles of Microeconomics **Credits: 3**
- ECO 121 - Principles of Macroeconomics **Credits: 3**
- ERS 101 - Introduction to Earth Science **Credits: 4**
- ERS 102 - Environmental Geology **Credits: 4**
- ERS 103 - Dynamic Earth **Credits: 3**
- ERS 107 - Energy, Environment, & Climate **Credits: 3**
- FIN 350 - Business Finance **Credits: 3**
- FIN 352 - Financial Institutions **Credits: 3**
- MAT 228 - Calculus III **Credits: 4**
- MAT 262 - Linear Algebra **Credits: 3**
- MAT 487 - Numerical Analysis **Credits: 3**
- MEE 150 - Applied Mechanics: Statics **Credits: 3**
- MEE 251 - Strength of Materials **Credits: 3**
- MEE 252 - Statics and Strength of Materials **Credits: 3**

- MEE 270 - Applied Mechanics: Dynamics **Credits: 3**
- MEE 360 - Fluid Mechanics **Credits: 3**
- MET 121 - Technical Drawing **Credits: 3**
- MET 150 - Statics **Credits: 3**
- MET 219 - Strength of Materials **Credits: 3**
- MET 236 - Thermal Applications **Credits: 3**
- MET 475 - Fuel Cell Science and Technology **Credits: 3**
- MGT 220 - The Legal Environment of Business **Credits: 3**
- MGT 325 - Principles of Management and Organization **Credits: 3**
- MGT 330 - Human Resource Management **Credits: 3**
- MGT 331 - Labor-Management Relations **Credits: 3**
- MGT 337 - Production and Operations Management **Credits: 3**
- MKT 270 - Introduction to Marketing **Credits: 3**
- MKT 372 - Integrated Marketing Communication **Credits: 3**
- MKT 374 - Personal Selling and Sales Management **Credits: 3**
- PHY 236 - Introductory Quantum Physics **Credits: 3**
- PHY 454 - Electricity and Magnetism I **Credits: 3**
- PPA 264 - Introduction to the Pulp and Paper Industry **Credits: 3**
- PPA 466 - Paper Technology **Credits: 3**
- SVT 475 - Small Business Management **Credits: 3**

EET Technical Electives

- EET 414 - Printed Circuit Board Design **Credits: 3**
- EET 415 - Automation and Integration **Credits: 3**
- EET 423 - Protective Relay Applications **Credits: 3**
- EET 460 - Renewable Energy and Electricity Production **Credits: 3**
- EET 498 - Selected Topics in Electrical Engineering Technology **Credits: 1-4**
- MET 475 - Fuel Cell Science and Technology **Credits: 3**
- or
- MEE 475 - Fuel Cell Science and Technology **Credits: 3**

Power Concentration

For students interested in working with utilities and the generation, transmission, and distribution of energy via electric systems, a concentration in Power is available. The concentration will expose students to various generation technologies including renewables. Success in the courses will well prepare students for challenging career opportunities with utilities, consultants, and manufacturers. Further, students will be prepared to assist with development of the future grid and permit greater renewable energy generation penetration. Demand for graduates with this experience is expected to continue.

Required Courses

- EET 321 - Electro-Mechanical Energy Conversion **Credits: 4**
- EET 422 - Power Systems Analysis **Credits: 4**
- EET 423 - Protective Relay Applications **Credits: 3**

Elective Courses

Select two courses from the following list:

- EET 276 - Programmable Logic Controllers **Credits: 4**
- EET 460 - Renewable Energy and Electricity Production **Credits: 3**
- EET 415 - Automation and Integration **Credits: 3**

Engineering Physics

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: A grade of "C-" or better is required for all prerequisite courses in the major in order to proceed to subsequent courses in the major.

Other GPA requirements to graduate: A minimum cumulative GPA of 2.0 ("C") in the major (physics plus engineering sequence).

Required Course(s) for fulfilling Capstone Experience: PHY 400 and the sequence of PHY 481 and PHY 482 or HON 498 and HON 499

Contact Information: MacKenzie Stetzer, Associate Professor, Acting Chair, Department of Physics and Astronomy, 120 Bennett Hall, 207.581.1039, umphysicschair@maine.edu

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 in 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, physics.umaine.edu.

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 concentration, 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 concentrations include Biomedical, Chemical, Civil and Environmental, Computer, Electrical, and Mechanical. 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 231. 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, <http://www.abet.org>.

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, or on the department webpage (<https://physics.umaine.edu/undergraduate-programs/>). 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 - General Chemistry I **Credits: 3**
- CHY 123 - General Chemistry Laboratory I **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 I³ Credits: 3

First Year - Second Semester

- Computer Programming Course¹ 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**
- Engineering Concentration I² Credits: 3

Second Year - First Semester

- MAT 228 - Calculus III **Credits: 4**
- PHY 200 - Career Preparation in Physics and Engineering Physics I **Credits: 1**
- PHY 236 - Introductory Quantum Physics **Credits: 3**
- PHY 261 - Physical Measurements Laboratory **Credits: 2**
- Engineering Concentration II² Credits: 3
- Human Values/Social Context and Ethics Elective II³ Credits: 3

Second Year - Second Semester

- MAT 259 - Differential Equations **Credits: 3**
- PHY 223 - Special Relativity **Credits: 1**
- PHY 231 - Mathematical Methods in Physics **Credits: 3**
- PHY 241 - Computational Physics **Credits: 3**
- PHY 262 - Electronics **Credits: 2**
- Engineering Concentration III² Credits: 3

Third Year - First Semester

- PHY 364 - Modern Experimental Physics **Credits: 2**
- PHY 451 - Mechanics **Credits: 3**
- PHY 454 - Electricity and Magnetism I **Credits: 3**
- Engineering Concentration IV² Credits: 3
- Human Values/Social Context and Ethics Elective IV³ Credits: 3

Third Year - Second Semester

- PHY 365 - Mechanics Laboratory **Credits:** 2
- PHY 455 - Electricity and Magnetism II **Credits:** 3
- Engineering Concentration V² Credits: 3
- MAT Elective⁴ Credits: 3
- Human Values/Social Context and Ethics Elective IV³ Credits: 3
- Human Values/Social Context and Ethics Elective V³ 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 472 - Geometrical and Fourier Optics **Credits:** 3
- PHY 481 - Project Laboratory in Physics I **Credits:** 3
- Engineering Concentration VI² credits: 3
- Human Values/Social Context and Ethics Elective VI³ Credits: 3

Fourth Year - Second Semester

- PHY 482 - Project Laboratory in Physics II **Credits:** 3
- Technical Elective⁶ Credits: 3
- Engineering Concentration VII and VIII² Credits: 6
- PHY Elective II⁵ Credits: 3

Special Requirements:

¹ Students are required to take a course in computer programming. The list of acceptable courses includes: COS 125, COS 220, CIE 115 (Civil Engineering concentration), ECE 177 (Electrical or Computer Engineering concentration), and MEE 125 (Mechanical Engineering concentration). Other course substitutions require the permission of your advisor and approval of the Chairperson. Computer programming courses in an engineering department do not count as part of the engineering sequence.

² For students who have not chosen an Engineering Concentration during their first year, it is recommended they discuss possible courses with their advisors. Otherwise, students can follow the suggested options for specific concentrations that follow in this guide.

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

⁴ PHY 231 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.

⁵ Choose from MAT 262, STS 332, STS 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.

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

⁷ Any physics or astronomy course at the 400 level or higher is appropriate.

Engineering Physics students receive instruction and evaluation in technical writing as part of the junior laboratory sequence (PHY 364 and PHY 365). Students not evaluated as satisfactory may be required to take an additional course, such as ENG 317, which can be counted as a free elective.

All Engineering Physics students must take a thermodynamics course, typically MEE 230 or CHE 385.

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 480 - Physics of Materials **Credits:** 3
- PHY 496 - Field Experience in Physics **Credits:** 1-6
- PHY 501 - Mechanics **Credits:** 3
- PHY 574 - Methods of Mathematical Physics **Credits:** 3

Spring Semester

- PHY 447 - Molecular Biophysics **Credits:** 3 - 4
- PHY 463 - Statistical Mechanics **Credits:** 3
- PHY 470 - Nuclear Physics **Credits:** 2
- PHY 471 - Nuclear Physics Laboratory **Credits:** 1
- PHY 495 - Engineering Physics Practice **Credits:** 1-6
- PHY 496 - Field Experience in Physics **Credits:** 1-6

Biomedical Engineering Concentration

Core Courses:

CHY 122 - General Chemistry II **Credits:** 3

CHY 124 - General Chemistry Laboratory II **Credits:** 1

BEN 201 - Fundamentals of Biomedical Engineering **Credits:** 4

BEN 202 - Transport Phenomena in Biomedical Systems **Credits:** 4

ECE 209 - Fundamentals of Electric Circuits **Credits:** 3

Following these initial five core courses, the student must take the following 12 credits of courses (or substitute up to 4 credits from another engineering discipline area for one of the courses below):

BEN 401 - Dynamic Biomedical Systems **Credits:** 3

BEN 402 - Biomaterials and the Cellular Interface **Credits:** 3

CHE 350 - Statistical Process Control and Analysis **Credits:** 3

CHE 361 - Chemical Engineering Laboratory I Credits: 3

Biomedical Engineering Concentration in Engineering Physics - Required Courses in Suggested Sequence first two years

First Year - First Semester

- CHY 121 - General Chemistry I **Credits: 3**
- CHY 123 - General Chemistry Laboratory I **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 - General Chemistry II **Credits: 3**
- CHY 124 - General Chemistry Laboratory II **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 261 - Physical Measurements Laboratory **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 231 - Mathematical Methods in Physics **Credits: 3**
See Footnote 7
- PHY 262 - Electronics **Credits: 2**
- Human Values/Social Context and Ethics Elective II Credits: 3

Chemical Engineering Concentration

Core Courses:

CHY 122 - General Chemistry II Credits: 3

CHY 124 - General Chemistry Laboratory II Credits: 1

CHE 200 - Fundamentals of Process Engineering Credits: 4*

CHE 385 - Chemical Engineering Thermodynamics I Credits: 3 *

ECE 209 - Fundamentals of Electric Circuits Credits: 3

In addition to these initial five core courses, the student must take the following 17 credits of courses (or substitute up to 6 credits from another engineering discipline area):

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: 4*

CHE 410 - Advanced Materials Credits: 3

Note: *A minor in Process Engineering can be obtained by completing the required courses for this concentration.

Chemical Engineering Concentration in Engineering Physics - Required Courses in Suggested Sequence first two years

First Year - First Semester

- CHY 121 - General Chemistry I **Credits: 3**
- CHY 123 - General Chemistry Laboratory I **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 - General Chemistry II **Credits: 3**
- CHY 124 - General Chemistry Laboratory II **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 261 - Physical Measurements Laboratory **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 231 - Mathematical Methods in Physics **Credits: 3**
See Footnote 7
- PHY 262 - Electronics **Credits: 2**
- Human Values/Social Context and Ethics Elective Credits: 3

Civil and Environmental Engineering Concentration

Core Courses:

CIE 340 - Introduction to Structural Analysis Credits: 4

CIE 350 - Hydraulics Credits: 3

ECE 209 - Fundamentals of Electric Circuits Credits: 3

MEE 150 - Applied Mechanics: Statics Credits: 3

MEE 251 - Strength of Materials Credits: 3

The required advanced CIE courses cover the technical areas of transportation, environmental engineering, hydraulics/fluids, and structures. Following the initial five core courses, students must choose at a minimum 3 advanced courses.

Transportation Focus Area:

CIE 424 - Urban Transportation Planning Credits: 3

CIE 425 - Transportation Safety Credits: 3

CIE 426 - Advanced Roadway Design Credits: 3

Environmental Engineering Focus Area:

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

Hydraulics/Fluids Focus Area:

CIE 450 - Open Channel Hydraulics Credits: 3

CIE 455 - Hydrology Credits: 3

CIE 456 - Groundwater Hydrology and Hydraulics Credits: 3

Structures Focus Area:

CIE 440 - Structural Analysis I Credits: 4

CIE 442 - Structural Design I Credits: 4

CIE 443 - Structural Design II Credits: 4

Optional Courses:

CIE 365 - Soil Mechanics Credits: 3

CIE 460 - Geotechnical Engineering Credits: 3

CIE 480 - Wind Energy Engineering Credits: 3

Civil and Environmental Engineering Concentration in Engineering Physics - Required Courses in Suggested Sequence first two years

First Year- First Semester

- CHY 121 - General Chemistry I **Credits: 3**
- CHY 123 - General Chemistry Laboratory I **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

- CIE 115 - Computers in Civil Engineering **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 261 - Physical Measurements Laboratory **Credits: 2**
- PHY 236 - Introductory Quantum Physics **Credits: 3**

- Human Values/Social Context and Ethics Elective II Credits: 3

Second Year - Second Semester

- MAT 259 - Differential Equations **Credits: 3**
- MEE 251 - Strength of Materials **Credits: 3**
- PHY 200 - Career Preparation in Physics and Engineering Physics I **Credits: 1**
- PHY 223 - Special Relativity **Credits: 1**
- PHY 231 - Mathematical Methods in Physics **Credits: 3**
See Footnote 7
- PHY 262 - Electronics **Credits: 2**
- Human Values/Social Context and Ethics Elective III Credits: 3
- Engineering Sequence III Credits: 3

Computer Engineering Concentration

Core Courses:

ECE 210 - Electric Circuits I Credits: 3

ECE 271 - Microcomputer Architecture and Applications Credits: 4

ECE 275 - Sequential Logic Systems Credits: 3

ECE 471 - Embedded Systems Credits: 3

Following the initial 4 courses, students must choose 4 more Engineering courses, with one of these courses from outside the ECE department (i.e. a non-ECE course).

Embedded Control:

ECE 414 - Feedback Control Systems Credits: 3

ECE 477 - Hardware Applications Using C Credits: 3

ECE 478 - Industrial Computer Control Credits: 3

Robotics:

ECE 417 - Mobile Robotics Credits: 3

ECE 477 - Hardware Applications Using C Credits: 3

High-Performance Computing Networking:

ECE 331 - Introduction to Unix Systems Administration Credits: 3

ECE 435 - Network Engineering Credits: 3

ECE 477 - Hardware Applications Using C Credits: 3

Optional Courses:

ECE 314 - Signals and Systems Credits: 3

ECE 473 - Computer Architecture and Organization Credits: 4

ECE 486 - Digital Signal Processing Credits: 4

Computer Engineering Concentration in Engineering Physics - Required Courses in Suggested Sequence first two years

First Year - First Semester

- CHY 121 - General Chemistry I **Credits: 3**
- CHY 123 - General Chemistry Laboratory I **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

- 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 I **Credits: 3**
- MAT 228 - Calculus III **Credits: 4**
- PHY 261 - Physical Measurements Laboratory **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: 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 231 - Mathematical Methods in Physics **Credits: 3**⁸
- PHY 262 - Electronics **Credits: 2**
- Human Values/Social Context and Ethics Elective III Credits: 3

Electrical Engineering Concentration

Core Courses:

ECE 210 - Electric Circuits I Credits: 3

ECE 214 - Electric Circuits II Credits: 4

ECE 314 - Signals and Systems Credits: 3

ECE 342 - Electronics I Credits: 4

Note: Taking ECE 342 will satisfy the electronics requirement; students should NOT take PHY 262.

Following the initial 4 courses, students must choose 4 more Engineering courses, with one of these courses from outside the ECE department (i.e. a non-ECE course).

Communications & Wireless:

ECE 453 - Microwave Engineering Credits: 4

ECE 484 - Communications Engineering Credits: 3

Power and Alternative Energy:

ECE 323 - Electric Power Conversion Credits: 3

ECE 427 - Electric Power Systems Credits: 4

Microelectronics and Circuits:

ECE 444 - Analog Integrated Circuits Credits: 3

ECE 445 - Analysis and Design of Digital Integrated Circuits Credits: 3

ECE 462 - Introduction to Basic Semiconductor Devices and Associated Circuit Models Credits: 3

ECE 464 - Microelectronics Science and Engineering Credits: 3

State and Sensor:

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 466 - Sensor Technology and Instrumentation Credits: 4

Optional Courses:

ECE 316 - Random Signal Analysis Credits: 3

ECE 343 - Electronics II Credits: 4

ECE 351 - Fields and Waves Credits: 3

ECE 467 - Solar Cells and Their Applications Credits: 3

Electrical Engineering Concentration in Engineering Physics - Required Courses in Suggested Sequence first two years

First Year -First Semester

- CHY 121 - General Chemistry I **Credits: 3**
- CHY 123 - General Chemistry Laboratory I **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

- 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**
- Human Values/Social Context and Ethics Elective II Credits: 3

Second Year -First Semester

- ECE 210 - Electric Circuits I **Credits: 3**
- MAT 228 - Calculus III **Credits: 4**
- PHY 261 - Physical Measurements Laboratory **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 - Electric Circuits II **Credits: 4**
- 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 231 - Mathematical Methods in Physics **Credits: 3**
See Footnote 7

Mechanical Engineering Concentration

Core Courses:

ECE 209 - Fundamentals of Electric Circuits Credits: 3

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

Following the initial 6 courses, students must choose a minimum of 2 advanced classes.

Energy Systems:

MEE 432 - Heat Transfer Credits: 3

MEE 433 - Solar-Thermal Engineering Credits: 3

MEE 462 - Dynamics of Fluid Flow Credits: 3

MEE 484 - Power Plant Design and Engineering Credits: 3

Mechanical Design:

MEE 320 - Materials Engineering and Science Credits: 3

MEE 450 - Mechanics of Composite Materials Credits: 3

MEE 455 - Advanced Strength of Materials Credits: 3

MEE 471 - Mechanical Vibrations Credits: 3

Dynamics and Control:

MEE 370 - Modeling, Analysis and Control of Mechanical Systems Credits: 3

MEE 444 - Robot Dynamics and Control Credits: 3

Aerodynamics:

MEE 462 - Dynamics of Fluid Flow Credits: 3

Optional Courses:

MEE 380 - Design I Credits: 3

MEE 381 - Design II Credits: 3

MEE 456 - Introduction to the Finite Element Method Credits: 3

Mechanical Engineering Concentration in Engineering Physics - Required Courses in Suggested Sequence first two years

First Year - First Semester

- CHY 121 - General Chemistry I **Credits: 3**
- CHY 123 - General Chemistry Laboratory I **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

- ENG 101 - College Composition **Credits: 3**
- MAT 127 - Calculus II **Credits: 4**
- MEE 125 - Computational Tools for Mechanical Engineers **Credits: 3**
- 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 261 - Physical Measurements Laboratory **Credits: 2**
- PHY 236 - Introductory Quantum Physics **Credits: 3**
- Human Values/Social Context and Ethics Elective II Credits: 3

Second Year - Second Semester

- 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 231 - Mathematical Methods in Physics **Credits: 3**
See Footnote 7
- PHY 262 - Electronics **Credits: 2**
- Human Values/Social Context and Ethics Elective II Credits: 3

Mechanical 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: A minimum cumulative GPA of 2.0 in MEE courses.

Required Course(s) for fulfilling Capstone Experience: MEE 487 and MEE 488

Contact Information: Dr. Masoud Rais-Rohani, Mechanical Engineering Chair, Ferland Engineering Education and Design Center, Room 237F, Tel: (207)581-4120.

The mission of the Department of Mechanical Engineering is to educate students for success in the field of mechanical engineering by providing academic programs that promote engineering principles, experiential learning, critical thinking, creative problem-solving, teamwork, leadership and outreach, and to pursue innovative research and scholarly achievement for advancing the State and developing technology solutions to societal needs.

Mechanical engineers work in transportation, energy, chemical, and biomedical industries, among many others. They work for small and large companies, consulting firms, laboratories, and government agencies. Many mechanical engineers are employed by manufacturers in aerospace, automotive, and shipbuilding. Mechanical engineers solve problems by developing systems that involve moving parts, ranging from small biomedical devices to giant machines used in mining, agriculture, and construction. Mechanical engineers conduct research in solar and wind energy, advanced materials, computer modeling, additive manufacturing, jet and rocket propulsion, among many other topics.

The undergraduate program has been developed to enable the student to begin a professional career in engineering after graduation or to pursue advanced studies in graduate school. Additional information can be found online at <https://umaine.edu/mecheng/>.

Program Educational Objectives

Within a few years after graduation, those holding a bachelor's degree in Mechanical Engineering from UMaine are expected to:

1. Successfully practice engineering in roles of increasing responsibility to serve local, state, national, and international industries and government agencies.
2. Demonstrate a spirit of lifelong learning by pursuing professional licensure, graduate education, short courses or other training programs in engineering or related fields.
3. Demonstrate professional and ethical responsibility, and awareness of diversity, equity, and inclusion, in their work and daily lives.
4. Participate in their community and in so doing advocate for the profession.

Student Outcomes

By the end of their undergraduate degree program in mechanical engineering, students will have:

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
3. an ability to communicate effectively with a range of audiences.
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.

5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Program Description

The undergraduate mechanical engineering program develops the student's creative potential to meet the increasingly complex needs of industry, government and graduate education. It provides a foundation of knowledge in mathematics, basic physical sciences, thermal sciences, dynamic systems, materials science, fluid and solid mechanics and design of systems.

Since engineers must address problems requiring awareness of economical, ethical, political, social and legal issues, the curriculum 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 recommended curriculum. The format 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 electives among the courses required for the bachelor's degree. Six electives (18 credits) must satisfy the Human Values and Social Context (HVSC) 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. The remaining four are technical electives (12 credits), with one accepted at 300-level or higher from the list of approved courses. By careful use of this flexibility in electives, students may pursue in some depth their particular interests in both technical and non-technical subjects.

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 bachelor's degree program in Mechanical Engineering is accredited by the Engineering Accreditation Commission of ABET, 415 N. Charles St, Baltimore, MD 21201, telephone: (410) 347-7700.

Required Courses in Suggested Sequence for the B.S. Degree in Mechanical Engineering

The recommended sequence of the four-year curriculum is shown below and can be accessed online at <https://umaine.edu/mecheng/ugcurriculum/>. This program can be adapted to a student's special scheduling needs in consultation with an academic advisor.

First Year - First Semester

- ENG 101 - College Composition **Credits:** 3 (Footnote 1)
- MAT 126 - Calculus I **Credits:** 4
- MEE 101 - Introduction to Mechanical Engineering **Credits:** 1
- MEE 120 - Engineering Graphics and Computer Aided Design **Credits:** 2
- 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

- MAT 127 - Calculus II **Credits: 4**
- MEE 125 - Computational Tools for Mechanical Engineers **Credits: 3** (Footnote 3)
- 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 (Footnote 2)

Second Year - First Semester

- CHY 121 - General Chemistry I **Credits: 3**
- CHY 123 - General Chemistry Laboratory I **Credits: 1**
- **OR**
- CHY 131 - Chemistry for Civil, Electrical and Mechanical Engineers **Credits: 3**
- CHY 133 - Chemistry for Civil, Electrical and Mechanical Engineers 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 (Footnote 2)

Second Year - Second Semester

- ECE 209 - Fundamentals of Electric Circuits **Credits: 3**
- ENG 320 - Technical Communication for Engineering **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**

Third Year - First Semester

- MEE 320 - Materials Engineering and Science **Credits: 3**
- MEE 360 - Fluid Mechanics **Credits: 3**
- MEE 380 - Design I **Credits: 3**
- MEE 456 - Introduction to the Finite Element Method **Credits: 3**
- STS 332 - Statistics for Engineers **Credits: 3**

Third Year - Second Semester

- MEE 330 - Manufacturing Engineering **Credits: 3**
- MEE 341 - Mechanical Laboratory I **Credits: 3**
- MEE 370 - Modeling, Analysis and Control of Mechanical Systems **Credits: 3**
- MEE 381 - Design II **Credits: 3**
- Engineering Elective Credits: 3 (Footnote 4)

Fourth Year - First Semester

- MEE 432 - Heat Transfer **Credits: 3**
- MEE 442 - Mechanical Laboratory II **Credits: 2**
- MEE 487 - Capstone Design I **Credits: 4**
- MEE Technical Elective Credits: 3 (Footnote 4)
- MEE Technical Elective Credits: 3 (Footnote 4)

Fourth Year - Second Semester

- MEE 443 - Mechanical Laboratory III **Credits: 2**
- MEE 471 - Mechanical Vibrations **Credits: 3**
- MEE 488 - Capstone Design II **Credits: 3**
- MEE Technical Elective Credits: 3 (Footnote 4)
- Human Values and Social Context Elective Credits: 3 (Footnote 2)
- Human Values and Social Context Elective Credits: 3 (Footnote 2)

Aerospace Engineering Concentration

Aerospace Engineering is an ever-evolving and highly challenging career choice. Aerospace engineers are on the leading-edge of that evolution, involved in research, design and development of a wide range of fascinating vehicles, some traveling at astounding speeds through both air and space. These systems can include satellites, launch vehicles, fixed-wing aircraft, helicopters, marine vessels, projectiles, airdrop vehicles and an ever widening range of unmanned autonomous stems.

The skills developed in these courses can be applied in a number of different industries, including those associated with aerospace science missions, defense missions and commercial applications. as well as in the automobile and marine industries.

For more information on the Undergraduate Aerospace Engineering Concentration, please contact Dr. Alex Friess.

Courses

The Aerospace Concentration will require completion of any three of the following courses with a grade of C or better:

- MEE 348 - Introduction to Flight **Credits: 3**
- MEE 449 - Aircraft Performance **Credits: 3**
- MEE 448 - Aircraft Design **Credits: 3**
- MEE 452 - Aircraft and Automobile Structures **Credits: 3**
- MEE 462 - Dynamics of Fluid Flow **Credits: 3**
- MEE 463 - Applied Computational Fluid Dynamics **Credits: 3**
- MEE 547 Flight Dynamics and Control of Aircraft Credits: 3
- MEE 548 Spacecraft Orbit and Attitude Dynamics and Control Credits : 3

Special Requirements and Footnotes:

- ¹General education requirements mandate English 101 and two writing intensive courses. MEE 341 and ENG 320 are designated as writing intensive courses within the MEE major.

- ²Students 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 15 credit hours of electives to meet the "Human Values and Social Context" (HVSC) requirement and ethics requirement. ENG 320 satisfies the Social Contexts and Institutions category within HVSC requirements.
- ³Either of the following may be substituted for MEE 125:
 - COS 220 - Introduction to C++ Programming Credits: 3
 - ECE 177 - Introduction to Programming for Engineers Credits: 4

⁴Accepted courses for Engineering Electives:

- MEE 348 - Introduction to Flight Credits: 3
- MEE 394 - Mechanical Engineering Practice Credits: 3
- MEE 4XX - Any MEE Technical Elective
- CHE 350 - Statistical Process Control and Analysis Credits: 3
- CIE 340 - Introduction to Structural Analysis Credits: 4
- CIE 365 - Soil Mechanics Credits: 3
- ECE 316 - Random Signal Analysis Credits: 3
- ECE 417 - Mobile Robotics Credits: 3
- ECE 457 - Nanoscience Credits: 3
- 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 467 - Solar Cells and Their Applications Credits: 3
- EET 486 - Project Management Credits: 3
- EET 414 - Printed Circuit Board Design Credits: 3
- EET 460 - Renewable Energy and Electricity Production Credits: 3
- EET 484 - Engineering Economics Credits: 3
- INV 392 - Commercialize: Innovation Engineering III Credits: 3
- MET 321 - Industrial Vibrations Credits: 3
- MET 391 - Heating, Ventilating and Air Conditioning Credits: 3
- MET 440 - Lean Six Sigma Credits: 3
- PPA 466 - Paper Technology Credits: 3
- SVT 475 - Small Business Management Credits: 3

Other 300 or 400 level courses in the College of Engineering (BEN, CHE, CIE, CET, ECE, EET, MET, SVT), Innovation Engineering (INV), or Pulp and Paper (PPA) may be accepted as the Engineering Elective with MEE Department approval.

⁵Acceptable MEE Technical Electives include but are not limited to:

- MEE 430 Digital Manufacturing
- MEE 433 - Solar-Thermal Engineering Credits: 3
- MEE 441 - Manufacturing and Testing of Composites Credits: 3
- MEE 444 - Robot Dynamics and Control Credits: 3
- MEE 448 - Aircraft Design Credits: 3
- MEE 449 - Aircraft Performance Credits: 3
- MEE 450 - Mechanics of Composite Materials Credits: 3
- MEE 452 - Aircraft and Automobile Structures Credits: 3
- MEE 453 - Experimental Mechanics Credits: 3
- MEE 455 - Advanced Strength of Materials Credits: 3

- MEE 459 - Engineering Optimization Credits: 3
- MEE 462 - Dynamics of Fluid Flow Credits: 3
- MEE 463 - Applied Computational Fluid Dynamics Credits: 3
- MEE 475 - Fuel Cell Science and Technology Credits: 3
- MEE 477 - Introduction to Structural Dynamics Credits: 3
- MEE 480 - Wind Energy Engineering Credits: 3
- MEE 484 - Power Plant Design and Engineering Credits: 3
- MEE 486 - Refrigeration and Air Conditioning System Design Credits: 3
- MEE 489 - Offshore Floating System Design Credits: 3
- MEE 490 - Modern Control Theory and Applications Credits: 3
- MEE 491 - Offshore Wind Farm Engineering Credits: 3

Students may use the elective courses to broaden their knowledge 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 as well as artistic and creative works.

A grade of "C" or better is required in MEE 150, MEE 230, MEE 251, and MEE 270 for those courses to be used as prerequisites for other courses.

Master's Degree - Accelerated Track

Undergraduate engineering and engineering physics students can work toward earning a master's degree in mechanical engineering starting in their senior year. Qualified students can complete up to three graduate-level courses that can fulfill both undergraduate (technical elective) and graduate degree requirements. Both thesis and non-thesis options are available. Details may be found online at <https://umaine.edu/mecheng/graduate-program/>.

Scholarships

The department has several scholarships available on a competitive basis for students majoring in mechanical engineering. Outstanding incoming students will be automatically considered for all applicable scholarships. Current students should apply for college and departmental scholarships on an annual basis with details provided online at <https://umaine.edu/mecheng/scholarships/>.

Internship and Co-op Opportunities

Students are encouraged to pursue internship or co-op opportunities to gain practical experience while pursuing their mechanical engineering degree program. CareerLink (<https://umaine.edu/career/careerlink/>), managed by the Career Center, may be used to identify the available opportunities.

Study Abroad

Mechanical engineering students can engage in study abroad programs in a number of countries for completion of one or more courses that meet the undergraduate degree requirements. Through a partnership with University Studies Abroad Consortium, mechanical engineering students can complete their Fall-semester sophomore year at Valencia Polytechnic (*Universidad Politécnica de Valencia*) in Spain while staying on a 4-year graduation plan. Details may be found online at <https://umaine.edu/mecheng/undergraduate-program/>.

Undergraduate Research

Mechanical engineering student can engage in undergraduate research by working side-by-side with our highly research-active faculty and their graduate students. Interested student should review the mechanical engineering faculty profiles at <https://umaine.edu/mecheng/mee-faculty-staff/> and contact the faculty. Additional research opportunities are available at centers with significant engineering related activities such as the Advanced Manufacturing Center (<https://umaine.edu/amc/>), Advanced Structures and Composites Center (<https://composites.umaine.edu/>), and Frontier Institute for Research in Sensor Technologies (<https://umaine.edu/first/>).

Fundamentals of Engineering (FE) Examination

Students are recommended (but not required) to take the FE examination in their senior year before graduation. For more information, visit <https://umaine.edu/mecheng/fepe/>.

Mechanical Engineering Technology

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to graduate: 127

Minimum Cumulative GPA required to graduate: 2.0

Minimum Grade requirements for courses to count toward major: The 3-course math sequence (MAT 122, MAT 126, MAT 127) requires a C or better in each class to move on to the next class. ENG 101 requires a C or better to move on to ENG 317.

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 464 and MET 465

Course satisfying the writing intensive requirement within the major: MET 234

Contact Information: Brett Ellis, 215A Boardman, (207) 581-2134

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.

Program Description

Throughout the program students are preparing for professional practice by developing both technical and interpersonal skills. Early in the program students learn to create 3D computer models and communicate with 2D drawings. Then they learn to bring drawings to reality in our workshop. They develop skills working on diverse teams.

Students acquire math and science skills through a structured math sequence and courses in physics and chemistry. They continue to 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.

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 Mechanical Engineering Technology (MET) program is accredited by the Engineering Technology Accreditation Commission of ABET, <https://www.abet.org>.

Program Educational Objectives

The graduates of the UMaine Mechanical Engineering Technology Program, within a few years after graduation, are expected to:

1. demonstrate a sound knowledge of the fundamental principles of mathematics, science, and mechanical engineering technology;
2. utilize critical thinking and problem solving skills that can be applied to a wide range of problems - both technical and non-technical;
3. carry out the practice of engineering technology;

4. use communication, teamwork, and leadership skills, appreciate social values, and understand the implications of technology;

5. expand technical currency in response to the changing needs of society.

Student Outcomes

Prior to graduation, students are required to demonstrate the following learned capabilities:

1. an ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve broadly- defined engineering problems appropriate to the discipline;

2. an ability to design systems, components, or processes meeting specified needs for broadly-defined engineering problems appropriate to the discipline;

3. an ability to apply written, oral, and graphical communication in broadly- defined technical and non-technical environments; and an ability to identify and use appropriate technical literature;

4. an ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results to improve processes; and

5. an ability to function effectively as a member or leader on a technical team.

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

- MAT 126 - Calculus I **Credits: 4**
- MET 107 - Machine Tool Laboratory I **Credits: 3**
- MET 150 - Statics **Credits: 3**
- PHY 108 - Technical Physics II **Credits: 4**
- Computer Science Elective Credits: 3
(COS 120 recommended)

Second Year - First Semester

- CMJ 103 - Public Speaking **Credits: 3** ¹

- MAT 127 - Calculus II **Credits: 4**
- MET 219 - Strength of Materials **Credits: 3**
- MET 233 - Thermal Science **Credits: 3**
- MET 270 - Manufacturing Technology **Credits: 3**

Second Year - Second Semester

- EET 330 - Electrical Applications **Credits: 3**
- MET 126 - Machine Drawing **Credits: 3**
- MET 234 - Mechanical Technology Laboratory I **Credits: 3**
- MET 236 - Thermal Applications **Credits: 3**
- MAT 258 - Introduction to Differential Equations with Linear Algebra **Credits: 4**

Third Year - First Semester

- CHY 121 - General Chemistry I **Credits: 3**
- CHY 123 - General Chemistry Laboratory I **Credits: 1**
- ENG 317 - Business and Technical Writing **Credits: 3**
- MET 213 - Introduction to CAM **Credits: 2**
- MET 312 - Machine Tool Processing II **Credits: 3**
- MET 317 - Dynamics **Credits: 3**

Third Year - Second Semester

- MET 325 - Fluid Flow Technology **Credits: 3**
- MET 462 - Design I **Credits: 4**
- Cultural Diversity and International Perspectives Elective Credits: 3¹
- MET Laboratory-based Technical Elective Credits: 3²
- MET Technical Elective Credits: 3²

Fourth Year - First Semester

- MET 355 - Engineering Materials **Credits: 3**
- MET 463 - Design II **Credits: 3**
- MET 464 - Senior Design Project I **Credits: 2**
- EET 484 - Engineering Economics **Credits: 3**
- MET Technical Elective Credits: 3²
- Western Cultural Tradition Elective Credits: 3¹

Fourth Year - Second Semester

- MET 465 - Senior Design Project II **Credits: 2**
- Artistic and Creative Expression Elective Credits: 3¹
- Engineering Sustainability Technical Elective Credits: 3²
- Population and the Environment Elective Credits: 3¹
- Technical Elective Credits: 3²

Student must see their advisor for approval of all electives.

- ¹General Education Requirement Electives do not have to be taken in the order shown.
- ²The technical elective, three MET technical electives, the computer science elective, and the engineering sustainability elective must be chosen from the list of approved "MET Technical Electives". One MET technical elective must include a laboratory component.

Mechanical Engineering Technology Technical Electives

The following is a list of approved technical electives. Students should always consult their advisor when registering for technical electives since some of these electives are essentially the same course taught in the context of a different curriculum. The technical elective, three MET technical electives, the computer science elective, and the engineering sustainability elective must be chosen from the list of approved "MET Technical Electives". One MET technical elective must include a laboratory component.

MET Technical Electives

- EET 460 - Renewable Energy and Electricity Production **Credits: 3**
- MET 391 - Heating, Ventilating and Air Conditioning **Credits: 3**
- MET 394 - Mechanical Engineering Technology Practice **Credits: 3**
- MET 440 - Lean Six Sigma **Credits: 3**
- MET 320 - Selected Topics in Mechanical Engineering Technology II **Credits: 1-3**
- MET 475 - Fuel Cell Science and Technology **Credits: 3**
- MEE 484 - Power Plant Design and Engineering **Credits: 3**

Laboratory Based MET Technical Electives

- EET 312 - Circuit Analysis II **Credits: 4**
- EET 274 - Introduction to Microcontrollers **Credits: 4**
- EET 241 - Analog Circuit Fundamentals **Credits: 4**
- EET 275 - Digital Communications **Credits: 4**
- EET 276 - Programmable Logic Controllers **Credits: 4**
- EET 321 - Electro-Mechanical Energy Conversion **Credits: 4**
- EET 324 - Network Analysis and Applications **Credits: 4**
- EET 325 - Design and Applications of Control Systems **Credits: 4**
- MET 313 - CAD / CAM Projects **Credits: 3**
- MET 320 - Selected Topics in Mechanical Engineering Technology II **Credits: 1-3**
(Topics varies by term; check with instructor to determine if laboratory based.)
- MET 321 - Industrial Vibrations **Credits: 3**
- MET 451 - Plastics Manufacturing **Credits: 3**
- MET 453 - Experimental Mechanics **Credits: 3**

Engineering Sustainability Technical Electives

- CIE 210 - Sustainability in Engineering **Credits: 3**
- ECE 467 - Solar Cells and Their Applications **Credits: 3**
- EET 460 - Renewable Energy and Electricity Production **Credits: 3**

- MEE 433 - Solar-Thermal Engineering **Credits: 3**
- MEE 480 - Wind Energy Engineering **Credits: 3**
- MET 440 - Lean Six Sigma **Credits: 3**
- STS 132 - Principles of Statistical Inference **Credits: 3**
- STS 332 - Statistics for Engineers **Credits: 3**
- SFR 455 - Bioenergy Sources, Systems and Environmental Effects **Credits: 3**

Technical Electives

- ACC 201 - Principles of Financial Accounting **Credits: 3**
- CET 228 - Introduction to Construction Estimating and Planning **Credits: 3**
- CHY 122 - General Chemistry II **Credits: 3**
- COS 221 - Data Structures in C++ **Credits: 3**
- EET 486 - Project Management **Credits: 3**
- MAT 228 - Calculus III **Credits: 4**
- MGT 325 - Principles of Management and Organization **Credits: 3**
- MGT 330 - Human Resource Management **Credits: 3**
- MGT 331 - Labor-Management Relations **Credits: 3**
- PPA 264 - Introduction to the Pulp and Paper Industry **Credits: 3**
- PPA 466 - Paper Technology **Credits: 3**
- SVT 475 - Small Business Management **Credits: 3**

Computer Science Electives

- COS 120 - Introduction to Programming I **Credits: 3**
- COS 121 - Coding for Everyone **Credits: 3**
- COS 125 - Introduction to Problem Solving Using Computer Programming **Credits: 4**
- COS 220 - Introduction to C++ Programming **Credits: 3**
- COS 221 - Data Structures in C++ **Credits: 3**
- ECE 177 - Introduction to Programming for Engineers **Credits: 4**
- MEE 125 - Computational Tools for Mechanical Engineers **Credits: 3**

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.

Surveying Engineering Technology

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: C or higher in MAT 116 and MAT 122

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

Courses satisfying the writing intensive requirement within the major: SVT 221, SVT 451 and SVT 475

Contact Information: Prof. Raymond Hintz, 316 Boardman Hall; ray.hintz@maine.edu

The Surveying Engineering Technology program educates 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 degree is offered both live and on-line.

The Surveying Engineering Technology program provides quality instruction in surveying and engineering topics blended with business and communications. The objective of the program is fulfilled by providing students with a foundation in mathematics, science, communications, social science, and humanities; coupled with topics in plane surveying, construction surveying, photogrammetry, remote sensing, boundary law, civil engineering technology, cadastral surveying, global positioning systems, land development design, and geographic information systems. 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 124 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 Surveying Engineering Technology (SVT) program is accredited by the Engineering Technology Accreditation Commission of ABET, <https://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:

1. an ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve broadly- defined engineering problems appropriate to the discipline;
2. an ability to design systems, components, or processes meeting specified needs for broadly-defined engineering problems appropriate to the discipline;
3. an ability to apply written, oral, and graphical communication in broadly- defined technical and non-technical environments; and an ability to identify and use appropriate technical literature;
4. an ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results to improve processes; and
5. an ability to function effectively as a member or leader on a technical team.

Computers

Incoming students are required to have a PC laptop computer. Visit our website for recommended configuration details, <https://umaine.edu/set/>, for recommended configuration details.

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

First Year - First Semester

- CMJ 103 - Public Speaking **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 and Cartography for Surveyors I **Credits: 3**

First Year - Second Semester

- ENG 101 - College Composition **Credits: 3**
- MAT 116 - Introduction to Calculus **Credits: 3**

- PHY 108 - Technical Physics II **Credits: 4**
- SVT 101 - Basic Surveying Field and Office Processes **Credits: 3**
- Artistic and Creative Expression Elective Credits: 3 **

Second Year - First Semester

- ² MAT 117 - Applications of Calculus **Credits: 3**
- STS 215 - Introduction to Statistics for Business and Economics **Credits: 3**
or
- STS 132 - Principles of Statistical Inference **Credits: 3**
- SVT 122 - AutoCAD for Surveyors II **Credits: 3**
- SVT 202 - Route & Site Surveying **Credits: 3**
- Program Elective Credits: 3 *

Second Year - Second Semester

- ENG 201 - Strategies for Writing Across Contexts **Credits: 3**
- SVT 201 - Adjustment Computations **Credits: 3**
- ³ SVT 221 - Boundary Law **Credits: 3**
- SVT 331 - Photogrammetry **Credits: 3**
- SVT 332 - Engineering for Surveyors **Credits: 3**

Third Year - First Semester

- ACC 201 - Principles of Financial Accounting **Credits: 3**
- ENG 317 - Business and Technical Writing **Credits: 3**
- SVT 322 - Preparing Effective Property Descriptions **Credits: 1**
- SVT 341 - Advanced Surveying **Credits: 3**
- SVT 451 - Survey Business Law **Credits: 3**
- ⁴ Communications Elective Credits: 3
- Population and the Environment Elective Credits: 3 **

Third Year - Second Semester

- ECO 120 - Principles of Microeconomics **Credits: 3**
or
- ECO 121 - Principles of Macroeconomics **Credits: 3**
- SVT 333 - Team Workflows in Surveying Practice **Credits: 1**
- SVT 352 - Practical Field Operations **Credits: 3**
- Cultural Diversity Elective Credits: 3 **
- Program Elective Credits: 3*

Fourth Year - First Semester

- ¹ EET 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 *
- Program Elective Credits: 3*

Fourth Year - Second Semester

- SFR 400 - Applied Geographic Information Systems **Credits: 4**
or
- GIS 300 - Geographic Information Systems (GIS) I Credits: 4 (University of Maine at Machias course)
- SVT 490 - SL: Surveying Capstone **Credits: 3**
- Program Elective Credits: 3 *
- Program Elective Credits: 3 *
- Fundamentals Surveying Exam (passing not required)

Students must see their advisor for approval of all electives.

¹Meets the General Education Ethics Elective Requirement

²May substitute MAT 126 for MAT 116, and MAT 127 for MAT 117

³Fulfills Western Cultural Tradition Elective

⁴Any CMJ class above CMJ 103 or equivalent

**Courses meeting the various general education requirements are available at <https://studentrecords.umaine.edu/resource/courses-meeting-gen-ed-2/>

Surveying Engineering Technology Technical Electives

*Any ACC, AST, BIO, BUA, CHY, MEE, CIE, EET, CET, MET, FIN, SFR, ERS, MGT, MKT, NAV, MSL, or SIE course that is not substantially duplicative of a required course or below the required courses in number.

Minor

Minor: Bioinstrumentation

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to earn minor: 26

GPA requirements to earn minor: 2.0

Minimum Grade requirements for courses to count toward minor: C- or better for all courses used to satisfy the concentration

Contact Information: Dr. Rosemary Smith, Professor, Electrical & Computer Engineering, (207) 581-3361, rosemary.smith@maine.edu

The Bioinstrumentation minor provides increased knowledge and skills specific to the development of electronic or computer systems used for biological and biomedical applications. Background in the biological sciences is required to prepare students for employment or graduate education in fields associated with clinical, therapeutic, and diagnostic applications of bioinstrumentation. Students completing the minor are uniquely positioned to work in management, production or research and development in a variety of industries such as medical devices, diagnostics, genetics, healthcare industry support, pharmaceutical production, drug discovery, environmental remediation, or agricultural advancement.

All students who complete the minor must complete two Biomedical Engineering courses, BEN401 and BEN 403 (6 credits) and two biological science prerequisites: BIO 100, and BIO 208 or BMB 280. These courses provide basic biological science background knowledge and literacy, application of engineering methods to biomedicine, and examination of specific bioinstrumentation examples. In addition, students must complete a sensors course (ECE 465) and an introduction to robotics course (ECE 417) (6 additional credits), along with the prerequisites: ECE 210 and ECE 177 or COS 220. The ECE courses provide an increased depth of knowledge in circuit design, programming, robotics and sensors, which are commonly implemented elements of bioinstrumentation.

Bioinstrumentation Required Courses (26-28 credits):

- **BIO 100 - Basic Biology Credits: 4**
- **BIO 208 - Anatomy and Physiology Credits: 4 or BMB 280 - Introduction to Molecular and Cellular Biology Credits: 3**
- **BEN 401 - Dynamic Biomedical Systems Credits: 3**
- **BEN 403 - Instrumentation in Biomedical Engineering Credits: 3**
- **ECE 177 - Introduction to Programming for Engineers Credits: 4 or COS 220 - Introduction to C++ Programming Credits: 3**
- **ECE 210 - Electric Circuits I Credits: 3**
- **ECE 417 - Mobile Robotics Credits: 3**
- **ECE 465 - Introduction to Sensors Credits: 3**

Minor: Biomedical Engineering

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: No grades below C-.

Contact Information: Michael Mason, Professor and Program Coordinator, 309 Jenness Hall, 207-581-2344;
michael.mason@maine.edu

Biomedical Engineers work at the forefront of research and industry and frequently address clinical, diagnostic, and therapeutic applications of engineering. Biomedical Engineers use engineering skills to design devices or develop methods that interface with biomedical systems to benefit society. Instruction in this minor is directed toward the instrumentation and techniques employed to analyze biomedical systems and processes, the challenges and methodologies associated with manipulating biological systems, and the current and future applications of Biomedical Engineering.

This minor is only available to students matriculated into an engineering degree program at the University of Maine. This minor is not available to students pursuing the Biomedical Engineering major.

Core Courses (11 credit hours)

- BEN 477 - Elements of Biomedical Engineering Design **Credits:** 3
- BIO 100 - Basic Biology **Credits:** 4
- BIO 208 - Anatomy and Physiology **Credits:** 4

Elective Courses (minimum 9 credit hours)

- BEN 361 - Biomedical Engineering Laboratory I **Credits:** 3
- BEN 363 - Biomedical Engineering Laboratory II **Credits:** 3
- BEN 396 - Research Experience in Biomedical Engineering **Credits:** 3
- BEN 401 - Dynamic Biomedical Systems **Credits:** 3
- BEN 402 - Biomaterials and the Cellular Interface **Credits:** 3
- BEN 403 - Instrumentation in Biomedical Engineering **Credits:** 3
- BEN 451 - Biological and Medical Image Analysis I **Credits:** 3
- BEN 452 - Biological and Medical Image Analysis II **Credits:** 3
- BEN 492 - Special Biomedical Engineering Design Projects **Credits:** 1-3
- BEN 498 - Special Topics in Biomedical Engineering **Credits:** 1-3
- ECE 417 - Mobile Robotics **Credits:** 3
- ECE 465 - Introduction to Sensors **Credits:** 3
- ECE 498 - Selected Topics in Electrical and Computer Engineering **Credits:** 1-3
- MEE 444 - Robot Dynamics and Control **Credits:** 3

Other technical elective options, including graduate courses, may be accepted by permission from the Biomedical Engineering Program Coordinator in the Chemical and Biomedical Engineering Department.

Minor: Computer Engineering

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: No grades below C-.

Contact Information: Dr. Bruce Segee, Professor of Electrical and Computer Engineering, (207) 581-2212, segee@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 14 credit hours of required courses and a minimum of six credit hours of ECE elective courses.

Core Courses (14 credit hours)

- ECE 177 - Introduction to Programming for Engineers **Credits:** 4
- ECE 271 - Microcomputer Architecture and Applications **Credits:** 4
- 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 - Mobile 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 Design, Programming and Data Structures) **Credits:** 4
- ECE 271 can be substituted by COS 235 (Computer Architecture) **Credits:** 4
- ECE 331 can be substituted by COS 331 (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 more than one grade less than a C-

Contact Information: Philip Dunn, Coordinator, Construction Engineering Technology, 132 Boardman Hall, 207-581 -2326, philip.dunnjr@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 planning 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 228 - Introduction to Construction Estimating and Planning **Credits:** 3
- CET 462 - Construction Planning and Scheduling **Credits:** 3

Examples of Optional Courses: Minimum of 12 Credits

- CET 101 - Plane Surveying **Credits:** 3
or
- SVT 102 - Surveying Principles for Civil Engineers **Credits:** 3
- CET 202 - Construction Layout **Credits:** 3
- CET 224 - Construction Safety **Credits:** 3
- CET 356 - Construction Project Administration **Credits:** 3
- CET 412 - Sustainable Population and Environmental Design and Construction **Credits:** 3
- CET 425 - Virtual Design and Construction **Credits:** 3
- CET 426 - Heavy Construction QA **Credits:** 3
- CIE 110 - Materials **Credits:** 3
- CIE 111 - Materials Laboratory **Credits:** 1

Minor: Electrical Engineering

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: No grades below C-.

Contact Information: Vijaya Devabhaktuni, Professor of Electrical and Computer Engineering, 207-581-2224, vijay.devabhaktuni@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 14 credit hours of required courses and a minimum of six credit hours of ECE elective courses.

Core Courses: (14 credit hours)

- ECE 177 - Introduction to Programming for Engineers **Credits: 4**
- ECE 210 - Electric Circuits I **Credits: 3**
- ECE 214 - Electric Circuits II **Credits: 4**
- 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 - Mobile Robotics **Credits: 3**
- ECE 427 - Electric Power Systems **Credits: 4**
- 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 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

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: Judith Pearse, Professor, Electrical Engineering Technology, 9 Barrows Hall, 207-581-2346, jpearse@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.

Required Courses (8 credit hours)

- EET 111 - Circuit Analysis I **Credits:** 4
or
- ECE 209 - Fundamentals of Electric Circuits **Credits:** 3
or
- EET 330 - Electrical Applications **Credits:** 3
- EET 312 - Circuit Analysis II **Credits:** 4

Recommended Courses (4-8 credit hours)

Although not required, it is recommended that students take one or both of the following:

- EET 276 - Programmable Logic Controllers **Credits:** 4
- EET 321 - Electro-Mechanical Energy Conversion **Credits:** 4

Elective Courses (3-11 credit hours)

Additionally, students may take any of the following electives to fulfill the 19 credit hour requirement:

- EET 274 - Introduction to Microcontrollers **Credits:** 4
- EET 241 - Analog Circuit Fundamentals **Credits:** 4
- EET 342 - Advanced Analog Circuit Design **Credits:** 4
- EET 414 - Printed Circuit Board Design **Credits:** 3
- EET 415 - Automation and Integration **Credits:** 3
- EET 460 - Renewable Energy and Electricity Production **Credits:** 3
- EET 486 - Project Management **Credits:** 3

Minor: Engineering Applications of Artificial Intelligence

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to earn minor: 18

Minimum cumulative GPA required to earn minor: 2.0

Minimum Grade requirements for courses to count toward minor: None.

Other GPA requirements to earn minor: None

Contact Information: Mohamad Musavi, Interim Dean, 205 AMC Building; 207-581-2218; musavi@maine.edu and Yifeng Zhu, Professor of Electrical and Computer Engineering, 271 Engineering Science Research Building, 207-581-2499; yifeng.zhu@maine.edu

The minor is a collection of courses that provide the student with applied knowledge of artificial intelligence methods in a vast number of engineering applications. In this day and age and with availability of vast amount of information, it is important for students to gain the knowledge of how to gather intelligence from data and apply it to their industrial processes and functions. The core and elective options include courses from engineering disciplines including one optional course from the School of Computing and Information Science. The minor was developed in consultation with all engineering departments/school and the School of Computing and Information Science.

Required core courses (12 credits)

- ECE 316 - Random Signal Analysis **Credits:** 3
or
- CHE 350 - Statistical Process Control and Analysis **Credits:** 3
or
- STS 332 - Statistics for Engineers **Credits:** 3
and
- ECE 498 - Selected Topics in Electrical and Computer Engineering **Credits:** 1-3
or
- CIE 115 - Computers in Civil Engineering **Credits:** 3
or
- MEE 125 - Computational Tools for Mechanical Engineers **Credits:** 3
or
- PHY 241 - Computational Physics **Credits:** 3
and
- ECE 490 - Neural Networks **Credits:** 3
or
- COS 470 - Introduction to Artificial Intelligence **Credits:** 3
- ECE 491 - Deep Learning **Credits:** 3

Elective Courses (at least 6 credits)

- COS 470 - Introduction to Artificial Intelligence **Credits:** 3
- ECE 417 - Mobile Robotics **Credits:** 3
- ECE 465 - Introduction to Sensors **Credits:** 3
- ECE 466 - Sensor Technology and Instrumentation **Credits:** 4

- ECE 490 - Neural Networks **Credits:** 3
- ECE 498 - Selected Topics in Electrical and Computer Engineering **Credits:** 1-3
- ECE 577 Fuzzy Logic **Credits:** 3
- MEE 444 - Robot Dynamics and Control **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 more than one grade less than a C-

Contact Information: School of Engineering Technology, 119 Boardman, 207-581-2340

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:

- ACC 201 - Principles of Financial Accounting **Credits:** 3
- ECO 120 - Principles of Microeconomics **Credits:** 3
- or
- ECO 121 - Principles of Macroeconomics **Credits:** 3
- EET 486 - Project Management **Credits:** 3 (see footnote 2)
- EET 484 - Engineering Economics **Credits:** 3 (see footnote 3)
- MGT 220 - The Legal Environment of Business **Credits:** 3 (see footnote 1)
- SVT 475 - Small Business Management **Credits:** 3

¹ SVT 451 - Survey Business Law Credits: 3 has been approved by the Maine School of Business to substitute for MGT 220 - The Legal Environment of Business Credits: 3

²Students may substitute CET 462 - Construction Planning and Scheduling Credits: 3 or CIE 413 - SL: Project Management Credits: 2 (plus one credit), for this course

³Students may substitute CIE 412 - Engineering Decisions Credits: 3

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 - SL: Small Group Communication **Credits:** 3

Decision Making - Choose 1

- BEN 477 - Elements of Biomedical Engineering Design **Credits:** 3
- MGT 325 - Principles of Management and Organization **Credits:** 3
- CET 458 - SL: Management of Construction **Credits:** 3
- CHE 350 - Statistical Process Control and Analysis **Credits:** 3
- CHE 477 - Elements of Chemical Engineering Design **Credits:** 3
- CIE 412 - Engineering Decisions **Credits:** 3
- CIE 413 - SL: Project Management **Credits:** 2
- CMJ 347 - Argument and Critical Thinking **Credits:** 3
- EET 486 - Project Management **Credits:** 3
- EET 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. Shaleen Jain, Chair; Professor of Civil Engineering, 207-581-2420, shaleen.jain@maine.edu

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 - General Chemistry I **Credits: 3**
with
- CHY 123 - General Chemistry Laboratory I **Credits: 1**
- CHY 122 - General Chemistry II **Credits: 3**
with
- CHY 124 - General Chemistry Laboratory II **Credits: 1**

Core Courses (13 credits)

- 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: 4**
- 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 - Environmental Economics and Policy **Credits: 3**
- ECO 381 - SL: Sustainability Science, Policy, and Action **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-.

Other requirements: A minimum of 15 credit hours must be completed at the University of Maine.

Contact Information: Masoud Rais-Rohani, Chair, 219 Boardman Hall, 207-581-4120, masoud.raisrohani@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**

Elective Courses: (6 credit hours minimum)

- All 300 and 400 level MEE courses are acceptable except MEE 360, MEE 394, MEE 442, MEE 443, MEE 487 and MEE 488.

Minor: Mechanical 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 more than one grade less than a C-

Contact Information: S. David Dvorak, 119 Boardman Hall, Room 112, 207-581-2338, dvorak@maine.edu

Core Courses

- MET 150 - Statics **Credits:** 3
or
- MEE 150 - Applied Mechanics: Statics **Credits:** 3
- MET 219 - Strength of Materials **Credits:** 3
- MET 233 - Thermal Science **Credits:** 3
or
- MEE 230 - Thermodynamics I **Credits:** 3
- MET 236 - Thermal Applications **Credits:** 3
- MET 317 - Dynamics **Credits:** 3
MET XXX Elective¹ **Credits:** 3

Electives (3 credits)

¹Students may select 3 credits of electives from the following courses:

- 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
- MET 355 - Engineering Materials **Credits:** 3
- MET 391 - Heating, Ventilating and Air Conditioning **Credits:** 3
- MET 394 - Mechanical Engineering Technology Practice **Credits:** 3
- MET 440 - Lean Six Sigma **Credits:** 3
- MET 462 - Design I **Credits:** 4
- MET 463 - Design II **Credits:** 3
- MET 475 - Fuel Cell Science and Technology **Credits:** 3

¹The 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: 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, (207)581-3361, rosemary.smith@maine.edu

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 - (BEN, CHE, 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.

- BEN 402 - Biomaterials and the Cellular Interface **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**
- 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: 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: Dr. Andrew Goupee, Assistant Professor of Mechanical Engineering, 206 Boardman Hall, 207-581-3657, agoupe91@maine.edu

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: Paul Villeneuve, Professor of Electrical Engineering Technology, (207) 581-2271, paul.villeneuve@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 I **Credits: 3**
- ECE 427 - Electric Power Systems **Credits: 4**
- 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 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: 4**
- 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 - SL: 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 EET 321 or ECE 427)
- INT 489 - Advanced Topics in Interdisciplinary Studies **Credits:** 1-99
Topic: Introduction to Renewable Energy Engineering
(NOTE: Students may substitute INT 489 with EET 460, Renewable Energy and Electricity Production, and one of the following: MET 236, MEE 230, MET 433 or CHE 385)

Elective Courses (at least 9 credits)

- CHE 498 - Special Topics in Chemical Engineering **Credits:** 1-3
Topic: Lignocellulosic Biorefinery
- CIE 455 - Hydrology **Credits:** 3
- ECE 427 - Electric Power Systems **Credits:** 4
or
- EET 422 - 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 480 - Wind Energy 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: 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 - SL: Sustainable Energy Economics & Policy **Credits:** 3
or
- ECO 450 - International Environmental Economics and Policy **Credits:** 3
- EET 460 - Renewable Energy and Electricity Production **Credits:** 3
- SFR 455 - Bioenergy Sources, Systems and Environmental Effects **Credits:** 3

Elective Courses: (9 credits)

- ECO 180 - Citizens, Energy & Sustainability **Credits:** 3
- EES 351 - Energy, Wealth, and Power: a Biophysical Systems view of Nature and Society **Credits:** 3
- ERS 107 - Energy, Environment, & Climate **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 321, ECE 427, or ECE 498 Topic: Electrical Circuits, Power, and Machinery)
- Other courses with permission

Minor: Robotics

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 Babak Hejrati, Rm 225 Boardman Hall, (207) 581-6689, babak.hejrati@maine.edu or Dr. Vikas Dhiman (minor completion audits), Rm 105 Barrows Hall, (207) 581-2222, vikas.dhiman@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.

Core Courses: (9 credit hours)

All the 9 credits should not be from the same course discipline.

- MEE 270 - Applied Mechanics: Dynamics **Credits:** 3
- ECE 417 - Mobile Robotics **Credits:** 3
- ECE 414 - Feedback Control Systems **Credits:** 3
- ECE 491/591 Deep Learning Credits: 3
- MEE 444 - Robot Dynamics and Control **Credits:** 3

Optional Courses: (9 credit hours minimum)

- ECE 465 - Introduction to Sensors **Credits:** 3
- ECE 471 - Embedded Systems **Credits:** 3
- ECE 478 - Industrial Computer Control **Credits:** 3
- ECE 490/590 - Neural Networks Credits: 3
- MEE 370 - Modeling, Analysis and Control of Mechanical Systems **Credits:** 3
- MEE 380 - Design I **Credits:** 3
- MEE 490/590 Modern Control Theory and Applications 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 more than one grade less than a C-

Contact Information: Ray Hintz, Coordinator, Surveying Engineering Technology, 316 Boardman Hall, ray.hintz@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

- SVT 101 - Basic Surveying Field and Office Processes **Credits: 3**
or
- CET 101 - Plane Surveying **Credits: 3**
(See Footnote 1)
- SVT 202 - Route & Site Surveying **Credits: 3**
or
- CET 202 - Construction Layout **Credits: 3**
(See Footnote 2)
- SVT 221 - Boundary Law **Credits: 3**

¹SFR 208 may be substituted with permission of advisor

²CET 202 is highly recommended, but SVT 341 may be substituted

Electives: 9 credits

- CET 332 - Civil Infrastructure **Credits: 3**
- SFR 400 - Applied Geographic Information Systems **Credits: 4**
- Any SVT Course (excluding SVT 100)

Non-Degree Certificates

Certificate in Research, Innovation, and Strategy (CRIS)

OVERVIEW OF REQUIREMENTS

Minimum number of credits required to earn certificate: 10-13

Minimum Cumulative GPA required to earn certificate: 2.5

Minimum Grade requirements for courses to count toward certificate: A minimum grade of C required in each course.

Other GPA requirements to earn certificate: None

Contact Information: Dr. Ali Abedi, Associate Vice President for Research, (207) 581-2231, ali.abedi@maine.edu, and Kathleen Toole, Administrative Coordinator, EPIC & IMRC Center, (207) 581-4308, kathleen.toole@maine.edu

The Experiential Programs Innovation Central's (EPIC) Certificate in Research, Innovation, and Strategy (CRIS) is designed to complement a student's core curriculum, and provide them with tangible skills to meet the needs of employers throughout Maine and across the world.

Coursework is designed to provide skill-building in the following areas:

- Project management
- Computational thinking
- Critical thinking
- Problem solving
- Communication
- Research
- Writing
- Marketing
- Teamwork and team management

Key objectives of the program include the following:

- Students will develop new workforce development skills that they otherwise would not gain through their regular academic program.
- Students will gain a deep understanding of experiential resources on campus, and have hands-on experience with those resources.
- Students will understand how to use changing and emerging technologies to creatively solve problems.
- Students will be able to articulate ways that their knowledge can be applied in real-world work settings clearly and effectively.

Eligibility Criteria:

Students at UMaine are eligible to enroll in the certificate program as long as the prerequisites for each course in the sequence are met. A minimum GPA of 2.5 applies to all candidates and minimum TOEFL score of 80 (IbT), 6.5 (IELTS) or 60 (PTE Academic) are required for international students. Up to two courses completed for the certificate may be double counted towards an undergraduate degree per the guidelines of the respective undergraduate degree program.

Requirements

The certificate requires the completion of 4 courses through a combination of courses as described in the course sequence section below.

- All students must take INT 125: Experiential Programs Innovation Central, which serves as a core component of the certificate
- Students will select one elective, non-major course to complete the certificate requirements

The Certificate program must be completed within 6 years from the date of acceptance into the program.

Course Sequence

Four pathways have been developed allowing students in the College of Engineering to obtain the certificate while tailoring the content of the program to their field of study. Students will select one course from each of four content areas: Communication, Research, Innovation, and Strategy. Some selected courses meet more than one content area.

Chemical and Biomedical Engineering (11-13 credits)

Communication: (choose one)

- BEN 479 - Biomedical Engineering Design II **Credits: 3**
- CHE 479 - Chemical Engineering Design Projects **Credits: 3**
- INT 398 - (BEN, CHE, CHY, ECE) Undergraduate Research Participation **Credits: 1-3**

Research: (choose one)

- INT 125 Experimental Program Innovation Central **Credits: 3**
- INT 398 (BEN, CHE, CHY, ECE) Undergraduate Research Participation **Credits: 3**

Innovation: (choose one)

- BEN 478 - Biomedical Engineering Design I **Credits: 2**
- CHE 477 - Elements of Chemical Engineering Design **Credits: 3**
- EET 115 - Creative Design Using CAD **Credits: 3**
- INV 121 - Fundamentals of Innovation **Credits: 3**

Strategy: (choose one)

- EET 115 Creative Design Using CAD **Credits: 3**
- INT 125 Experimental Program Innovation Central **Credits: 3**
- INV 121 Fundamentals of Innovation **Credits: 3**

Civil and Environmental Engineering (11-12 credits)

Communication: (choose one)

- CIE 411 - SL: Engineering Project Design **Credits: 3**

Research: (choose one)

- INT 125 Experimental Program Innovation Central **Credits: 3**
- INT 398 - (BEN, CHE, CHY, ECE) Undergraduate Research Participation **Credits: 1-3**

Innovation: (choose one)

- CIE 413 - SL: Project Management **Credits: 2**
- INV 121 - Fundamentals of Innovation **Credits: 3**

Strategy: (choose one)

- EET 115 - Creative Design Using CAD **Credits: 3**
- INT 125 Experimental Program Innovation Central **Credits: 3**

- INT 398 (BEN, CHE, CHY, ECE) Undergraduate Research Participation Credits: 3
- INV 121 Fundamentals of Innovation Credits: 3

Electrical and Computer Engineering (10-13 credits)

Communication: (choose one)

- ECE 403 - Electrical and Computer Engineering Design Project **Credits: 2**
- EET 486 - Project Management **Credits: 3**
- INT 398 - (BEN, CHE, CHY, ECE) Undergraduate Research Participation **Credits: 1-3**

Research: (choose one)

- INT 125 Experimental Program Innovation Central Credits: 3
- INT 398 (BEN, CHE, CHY, ECE) Undergraduate Research Participation Credits: 3

Innovation: (choose one)

- ECE 401 - Electrical Engineering Design Project **Credits: 2**
- EET 115 - Creative Design Using CAD **Credits: 3**
- INV 121 - Fundamentals of Innovation **Credits: 3**

Strategy: (choose one)

- ECE 402 - Electrical Engineering Design Project **Credits: 4**
- EET 115 Creative Design Using CAD Credits: 3
- INT 125 Experimental Program Innovation Central Credits:3
- INV 121 Fundamentals of Innovation Credits: 3

Mechanical Engineering (10-13 credits)

Communication: (choose one)

- INT 398 - (BEN, CHE, CHY, ECE) Undergraduate Research Participation **Credits: 1-3**
- MEE 120 - Engineering Graphics and Computer Aided Design **Credits: 2**
- MEE 488 - Capstone Design II **Credits: 3**

Research: (choose one)

- INT 125 Experimental Program Innovation Central Credits: 3
- INT 398 (BEN, CHE, CHY, ECE) Undergraduate Research Participation Credits: 3

Innovation: (choose one)

- EET 115 - Creative Design Using CAD **Credits: 3**
- INV 121 - Fundamentals of Innovation **Credits: 3**
- MEE 120 Engineering Graphics and Computer Aided Design Credits: 3

Strategy: (choose one)

- EET 115 Creative Design Using CAD Credits: 3
- INT 125 Experimental Program Innovation Central Credits: 3
- INV 121 Fundamentals of Innovation Credits: 3
- MEE 487 - Capstone Design I **Credits: 4**

Certificate: Composite Materials and Structures

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: C or higher in each course is required to count towards the certificate requirements

Contact Information: Masoud Rais-Rohani masoud.raisrohani@maine.edu, (207) 581-4120 (for College of Engineering) or Douglas Gardner douglasg@maine.edu, (207) 581-2846 (for School of Forest Resources)

Educational Objectives

- Introduce modern composites made of different constituent materials.
- Develop skills necessary for analysis, design, fabrication, and testing of modern composite materials and structures.
- Establish suitability of composite materials and structures for various applications.

Eligibility Criteria

Students at UMaine as well as others are eligible to enroll in the Certificate program as long as the prerequisites for each course in the sequence are met.

The courses completed for the Certificate may be counted towards an undergraduate or graduate degree per the guidelines of the respective undergraduate or graduate degree program.

Requirements

The Certificate requires the completion of 12 credits (4 courses) through a combination of 400- and graduate-level courses as described in the course sequence section below. A maximum of one course (or 3 credits) at 400 or 500 level may be transferred from outside of UMaine to the program for credit.

The Certificate program shall be completed within 3 years from the date of acceptance into the program.

Core Courses:

- MEE 441 - Manufacturing and Testing of Composites **Credits:** 3
and
- MEE 450 - Mechanics of Composite Materials **Credits:** 3
or
- CIE 543 - Introduction to Composite Materials in Civil Engineering **Credits:** 3

Elective Courses (6 credits, any two from the list below):

- MEE 550 - Mechanics of Laminated Composite Structures **Credits:** 3
- CIE 644 - Advanced Composite Materials in Civil Engineering **Credits:** 3
- SFR 531 - Mechanics of Wood and Wood Composites **Credits:** 3
- SFR 545 - Adhesion and Adhesives Technology **Credits:** 3
- SFR 550 - Wood-Polymer Hybrid Composites **Credits:** 3
- SFR 570 - Cellulose Nanomaterials and Their Composites **Credits:** 3

Certificate: Electrical Engineering Technology

OVERVIEW OF REQUIREMENTS

Minimum number of credits required to earn certificate: 18

Contact Information: Paul Villeneuve, Program Coordinator of Electrical Engineering Technology; 9 Barrows Hall; 207.581.2271; paul.villeneuve@maine.edu and William Manion, Director of School of Engineering Technology; 230 Boardman Hall; 207.581.2184; wmanion@maine.edu

The purpose of this certificate is to increase the technical knowledge and skills of an individual either working in industry or interested in acquiring skills EET graduates have obtained. General skills developed include AC circuit analysis, analog circuit fundamentals, and introductory power design and analysis. These technical content areas also include hands-on practical applications. Elective content allows students to develop specialized skills in additional content areas.

Required Courses:

- EET 312 - Circuit Analysis II **Credits:** 4
- EET 241 - Analog Circuit Fundamentals **Credits:** 4
- EET 321 - Electro-Mechanical Energy Conversion **Credits:** 4

Electives (select two):

- EET 115 - Creative Design Using CAD **Credits:** 3
- EET 274 - Introduction to Microcontrollers **Credits:** 4
- EET 275 - Digital Communications **Credits:** 4
- EET 276 - Programmable Logic Controllers **Credits:** 4
- EET 342 - Advanced Analog Circuit Design **Credits:** 4
- EET 414 - Printed Circuit Board Design **Credits:** 3
- EET 415 - Automation and Integration **Credits:** 3
- EET 422 - Power Systems Analysis **Credits:** 4
- EET 423 - Protective Relay Applications **Credits:** 3

Certificate: Engineering Applications of Artificial Intelligence

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: A minimum grade of C in each course

Contact Information: Mohamad Musavi, Associate Dean, College of Engineering, 205 AMC Building, (207)581-2218, musavi@maine.edu; and Yifeng Zhu, Professor of Electrical and Computer Engineering, 271 Engineering Science Research Building, (207)581-2499, yifeng.zhu@maine.edu

Requirements: The proposed free-standing certificate program requires the completion of 12 credits (4 courses) through a combination of 400- and 500-level courses as described in the proposed course sequence section below. A maximum of one course (or 3 credits) at 400 or 500 level may be transferred from outside of UMaine to the program for credit.

Prerequisites: Undergraduate applicants should have taken at least one course in each of the following three areas:

- college calculus (MAT 228 or equivalent),
- statistics and probability (STS 132, STS 332, STS 434, ECE 316, CHE 350 or equivalent), and
- engineering-level software programming (ECE 177, MEE 125, CIE 115, PHY 241, COS 125 or equivalent).

Class assignments in core courses listed below will use Python or Matlab. If students have extensive programming experiences in a different language (C/C++/Java/JavaScript/Perl/R), we recommend they familiarize themselves with Python and Matlab before their first course. In addition, it is expected that students who take COS 470 should have COS 226 (data structures and algorithms) or equivalent.

Educational Objectives:

- Gain sufficient knowledge of AI methods for developing engineering applications based on modern AI tools.
- Develop skills necessary for analyzing and processing data, and designing, implementing, and testing AI methods using available tools such as Matlab and Python.
- Establish suitability and validation of AI methods for engineering applications.

The courses completed for this certificate program may be counted towards an undergraduate or graduate degree per the guidelines of the respective undergraduate or graduate degree program.

The program shall be completed within 3 years from the date of acceptance into the program.

Suggested Course Sequence:

The proposed certificate program requires completion of 12 credits of coursework (4 courses) divided into two categories of core and elective courses as described below. Elective courses are classified into two categories: either (Category I) expose a new perspective of AI to increase the breadth, such as Fuzzy Logic, or (Category II) create an opportunity to apply AI to specific applications. All electives involve a course project, such as robotics and medical image analysis. All students in this certificate program must apply appropriate AI approaches learned from core courses to projects in elective courses.

Core Courses (6 credit hours)

- COS 470 - Introduction to Artificial Intelligence **Credits: 3**
or
- ECE 490 - Neural Networks Credits: 3
- ECE 491 - Deep Learning **Credits: 3**

Elective Courses (6 credits hours, any two courses from the list below:)

Category I:

- COS 470 - Introduction to Artificial Intelligence **Credits: 3**
- COS 475 - Machine Learning **Credits: 3**
- ECE 490 - Artificial Neural Networks Credits:3
- ECE 577 - Fuzzy Logic Credits: 3

Category II:

- BEN 451 - Biological and Medical Image Analysis I **Credits: 3**
- BEN 452 - Biological and Medical Image Analysis II **Credits: 3**
- ECE 417 - Mobile Robotics **Credits: 3**
- ECE 533 - Advanced Robotics Credits: 3
- MEE 444 - Robot Dynamics and Control **Credits: 3**
- MEE 459 - Engineering Optimization **Credits: 3**
or
- CIE 521 - Civil Engineering Systems and Optimization Credits: 3

Certificate: Surveying Engineering Technology

OVERVIEW OF REQUIREMENTS

Minimum number of credits required to earn certificate: 15

Minimum Cumulative GPA required to earn certificate: 2.0

Minimum Grade requirements for courses to count toward certificate: none

Other GPA requirements to earn certificate: None

Contact Information: Raymond Hintz, Professor of Surveying Engineering Technology, 119 Boardman Hall, (207)581-2341, ray.hintz@maine.edu

The online undergraduate Certificate in Surveying Engineering Technology (SVT) is designed to fit a national niche for professionals seeking licensure as land surveyors. The program is designed to serve those who have entered the surveying profession with a degree that is not surveying engineering technology, and their path to licensure requires a core group of surveying classes. It also serves those professional in states where a degree is not required for licensure, and instead a core curriculum is necessary which will be satisfied by the certificate. The certificate can serve as a stepping stone into the current online BS degree in surveying engineering technology (SVT).

Below are the required courses for the SVT Certificate:

15 credits are required to earn the certificate with three required courses of:

- SVT 101 - Basic Surveying Field and Office Processes **Credits:** 3
- SVT 202 - Route & Site Surveying **Credits:** 3
- SVT 221 - Boundary Law **Credits:** 3

The remaining two, 3-credit courses must be from this list:

- SVT 201 - Adjustment Computations **Credits:** 3
- SVT 331 - Photogrammetry **Credits:** 3
- SVT 341 - Advanced Surveying **Credits:** 3
- SVT 352 - Practical Field Operations **Credits:** 3
- SVT 437 - Practical GPS **Credits:** 3

The Maine Business School

The Maine Business School offers programs in business administration. This professional program 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
Business Information Systems & Security Management
Management
Marketing
Sport Management

Concentrations:
Innovation and Entrepreneurship
International Business

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

Innovation and Entrepreneurship Concentration:

Required Courses:

- INV 121 Fundamentals of Innovation
- INV 282 - Advanced Innovation Skills
- MGT 344 Entrepreneurship and New Venture Creation

Electives - (choose 2 courses):

- ECO 154 Small Business Economics and Management
- INV 405 - Innovation Leadership
- MGT 342 - Small Business Management
- PSY 230 Social Psychology
- or other select Innovation and Entrepreneurship related course

International Business Concentration:

Required Courses:

- MKT 376 International Marketing
- MGT 445 International Management
- FIN 455 International Corporate Finance
- INA 101 Introduction to International Affairs

A study abroad international experience

Electives - Pick two courses from the following list:

- ANT 120 - Religions of the World
- ANT 245 - Sex and Gender in Cross-Cultural Perspective
- CMJ 314 - International Media
- HTY 241 - History of Globalization, 1900-Present
- HTY 275 - Geography of Globalization
- POS 120 - Introduction to World Politics
- POS 336 - Government and Politics in Russia
- POS 337 - Government and Politics in Eurasia
- POS 376 - Politics of the Global Economy
- POS 470 - International Law
- ECO 339 - International Finance
- INA 201 - Topics in International Affairs
- INA 310 - Camden Conference Course
- GEO 100 - World Geography
- GEO 275 - Geography of Globalization
- Other appropriate courses subject to prior approval

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:

The Maine Business School utilizes professional advisors. Each student enrolled at the MBS will be assigned a professional advisor. In the student's first year they will be assigned to a Faculty Mentor 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 mentor in his/her intended major as well as a professional advisor. 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.

Honors Thesis Course:

Maine Business School students completing HON 499 with a major-specific topic may be able to count the course as an elective in their major with the Associate Dean's approval.

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.

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.

Differential Tuition:

The Maine Business School, similar to other colleges on campus, charges differential tuition in addition to standard tuition. Differential tuition provides one fee to replace numerous course, program, and lab fees. The revenue generated by differential tuition supports our mission by allowing us to offer our students best practice elements in analytics, projects, and connections to the community. Differential tuition is also used to continue to provide high-quality facilities for use by MBS students such as our Capital Markets Training Lab, student computer lab with no-fee printing, atrium, and assistance with online and synchronous programs. Differential tuition ensures that the degree programs and learning experiences in the Maine Business School are commensurate with accredited programs in the world.

Program Contacts

Business Administration

Patti C. Miles, Ph.D.

Maine Business School

211 Donald P. Corbett Business Building

(207) 581-1994

patti.miles@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 higher is required in all business core classes: MGT 101, ACC 201, ACC 202, MGT 220, BIS 105, BIS 235, MKT 270, MGT 325, MGT 337, MGT 343, FIN 350, and MGT 449 and in ACC 301, ECO 120, ECO 121 and MAT 115 or MAT 116 or MAT 126, PSY 100 and STS 215 or STS 132. Core business courses may be repeated only once, and 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 Business and Economics 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: MGT 449

Course satisfying the Writing Intensive requirement within the major: ACC 302

Contact Information: Patti Miles, Associate Dean, 211 DP Corbett, (207)581-1968, patti.miles@maine.edu

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 and be in good academic standing. 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.

First year accounting students should take MGT 101, ACC 201, ACC 202 and BIS 235. Sophomores (24 or more degree hours) may take BIS 105, MGT 220, MGT 325, ACC 301, ACC 302 and MKT 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 (52 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 (34 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 16-19 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 - 52 credits

I. Arts and Sciences Core (34 credits)

- CMJ 103 - Public Speaking **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 116 - Introduction to Calculus **Credits: 3**
- or
- MAT 126 - Calculus I **Credits: 4**

- STS 215 - Introduction to Statistics for Business and Economics **Credits: 3**
- or
- STS 132 - 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 (18 credits)

These 18 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 (34 Credits)

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

- ACC 201 - Principles of Financial Accounting **Credits: 3**
- ACC 202 - Principles of Managerial Accounting **Credits: 3**
- BIS 105 - Excel Fundamentals for Business Analytics **Credits: 1**
- BIS 235 - Digital Business Transformation **Credits: 3**
- FIN 350 - Business Finance **Credits: 3**
- MGT 101 - Introduction to Business **Credits: 3**
- MGT 220 - The Legal Environment of Business **Credits: 3**
- MGT 325 - Principles of Management and Organization **Credits: 3**
- MGT 337 - Production and Operations Management **Credits: 3**
- MGT 343 - Introduction to International Business **Credits: 3**
- MGT 449 - Strategic Management **Credits: 3**
- MKT 270 - Introduction to Marketing **Credits: 3**

Accounting (18 Credits)

- ACC 301 - Intermediate Accounting I **Credits: 3**
- ACC 302 - Intermediate Accounting II **Credits: 3**
- ACC 305 - Cost Accounting **Credits: 3**
- ACC 310 - Auditing **Credits: 3**
- ACC 312 - Federal Income Taxation **Credits: 3**

Plus either:

- ACC 315 - Accounting Information System **Credits: 3**
or
- ACC 406 - Advanced Managerial Accounting **Credits: 3**
or
- ACC 409 - Accounting for Governmental and Not-For-Profit Entities **Credits: 3**
or
- ACC 490 - Special Topics in Accounting **Credits: 1-3**

Free Electives (16 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 ACC 301 and ACC 302 in their third year if ACC 201 and ACC 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)

- BIS 235 - Digital Business Transformation **Credits: 3**
- ECO 120 - Principles of Microeconomics **Credits: 3**
- ENG 101 - College Composition **Credits: 3**
- MGT 101 - Introduction to Business **Credits: 3**
- PSY 100 - General Psychology **Credits: 3**

First Year - Second Semester (15 credits)

- BIS 105 - Excel Fundamentals for Business Analytics **Credits: 1**
- CMJ 103 - Public Speaking **Credits: 3**
- ECO 121 - Principles of Macroeconomics **Credits: 3**
- MAT 115 - Applied Mathematics for Business and Economics **Credits: 3**
or
- MAT 116 - Introduction to Calculus **Credits: 3**
or
- MAT 126 - Calculus I **Credits: 4**
- Applied Science Course

Second Year - First Semester (15-16 credits)

- ACC 201 - Principles of Financial Accounting **Credits: 3**
- MGT 220 - The Legal Environment of Business **Credits: 3**
- STS 215 - Introduction to Statistics for Business and Economics **Credits: 3**
or
- STS 132 - Principles of Statistical Inference **Credits: 3**
- Gen Ed: Population and Environment
- English Elective

Second Year - Second Semester (15-16 credits)

- ACC 202 - Principles of Managerial Accounting **Credits: 3**
- MGT 325 - Principles of Management and Organization **Credits: 3**
- MKT 270 - Introduction to Marketing **Credits: 3**
- Gen Ed: Lab or Applied Science
- Gen Ed: Artistic and Creative Expression

Third Year - First Semester (15 credits)

- ACC 301 - Intermediate Accounting I **Credits: 3**
- ACC 312 - Federal Income Taxation **Credits: 3**
- ENG 317 - Business and Technical Writing **Credits: 3**
- MGT 343 - Introduction to International Business **Credits: 3**
- Gen Ed: Cultural Diversity

Third Year - Second Semester (15 credits)

- ACC 302 - Intermediate Accounting II **Credits: 3**
- FIN 350 - Business Finance **Credits: 3**
- Accounting Elective
- Gen Ed: Western Cultural Tradition
- Elective

Fourth Year - First Semester (15 credits)

- ACC 305 - Cost Accounting **Credits: 3**
- ACC 310 - Auditing **Credits: 3**
- MGT 337 - Production and Operations Management **Credits: 3**
- Elective
- Elective

Fourth Year - Second Semester (13-18 credits)

- MGT 449 - Strategic Management **Credits: 3**
- Elective
- Elective
- Elective
- Elective

Business Administration in Business Information Systems and Security 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 higher is required in all business core classes: ACC 201, ACC 202, BIS 105, BIS 235, FIN 350, MGT 101, MGT 220, MGT 325, MGT 337, MGT 343, MGT 449, MKT 270 and in BIS 267, BIS 363, ECO 120, ECO 121, and MAT 115 or MAT 116 or MAT 126, PSY 100 and STS 132 or STS 215. Core business courses may be repeated only once, and 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 Business and Economics 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: MGT 449

Course satisfying the Writing Intensive requirement within the major: BIS 468

Contact Information: Patti Miles, Associate Dean, 211 DP Corbett, (207)581-1968, patti.miles@maine.edu

School/Departmental Requirements:

To earn a Bachelor of Science in Business Administration in Business Information Systems and Security Management (BISSM) 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., 2 out of 5 in BISSM) 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 and be in good academic standing. 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.

The Business Program for BISSM majors has three components:

1. The General Foundation (52 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 (34 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, business information systems, finance, management, marketing, or sport management) by taking five courses (six in accounting) beyond the introductory level in a chosen major. Concentrations in International Business and Entrepreneurship can be elected in addition to a major.

Note: The remaining 16-19 credits needed to qualify for graduation can be filled with any course offered at the University.

General Foundation - 52 Credits

Arts and Sciences Core (34 credits)

- CMJ 103 - Public Speaking **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 Credit: 3
- MAT 115 - Applied Mathematics for Business and Economics **Credits: 3**
or
- MAT 116 - Introduction to Calculus **Credits: 3**
or
- MAT 126 - Calculus I **Credits: 4**
- PSY 100 - General Psychology **Credits: 3**
- STS 132 - Principles of Statistical Inference **Credits: 3**
or
- STS 215 - Introduction to Statistics for Business and Economics **Credits: 3**
- Lab Science (General Education) Credits: 4
- Lab or Applied Science (General Education) Credits: 3

Outside Electives (18 credits)

These 18 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 (34 credits)

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

- ACC 201 - Principles of Financial Accounting **Credits: 3**
- ACC 202 - Principles of Managerial Accounting **Credits: 3**
- BIS 105 - Excel Fundamentals for Business Analytics **Credits: 1**
- BIS 235 - Digital Business Transformation **Credits: 3**
- FIN 350 - Business Finance **Credits: 3**
- MGT 101 - Introduction to Business **Credits: 3**
- MGT 220 - The Legal Environment of Business **Credits: 3**
- MGT 325 - Principles of Management and Organization **Credits: 3**
- MGT 337 - Production and Operations Management **Credits: 3**
- MGT 343 - Introduction to International Business **Credits: 3**
- MGT 449 - Strategic Management **Credits: 3**
- MKT 270 - Introduction to Marketing **Credits: 3**

Business Information Systems (15 Credits)

- BIS 267 - Database Management and Security **Credits: 3**
- BIS 363 - Information Security Management **Credits: 3**
- BIS 364 - Business Process Configuration **Credits: 3**
- BIS 468 - Information Systems Strategy and Security Management **Credits: 3**

Complete One Elective:

- BIS 345 - Business Analytics **Credits: 3**
or
- BIS 490 - Special Topics in Business Information Systems **Credits: 1-3**
or
- COS 125 - Introduction to Problem Solving Using Computer Programming **Credits: 4**
or
- ISS 220: Security Risk Management (UMA)
• or
- ISS 240 Security Policy and Governance (UMA)
• or
- ISS 334 Cyber Law (UMA)
• or
- CIS 110 Programming Fundamentals
• or
- ITT 451 Cyber Law Policies and Ethics (USM)
• or
- COS 184 Python Programming (USM)
• or
- BUS 240 Change Management (UMPI)
• or
- Other courses as approved

Free Electives (19 credits)

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

Required Courses in a Suggested Sequence for a BSBA in Business Information Systems and Security Management

First Year - First Semester (15 credits)

- CMJ 103 - Public Speaking **Credits: 3**
- ECO 120 - Principles of Microeconomics **Credits: 3**
- ENG 101 - College Composition **Credits: 3**
- MGT 101 - Introduction to Business **Credits: 3**
- PSY 100 - General Psychology **Credits: 3**

First Year - Second Semester (16 credits)

- BIS 105 - Excel Fundamentals for Business Analytics **Credits: 1**
- BIS 235 - Digital Business Transformation **Credits: 3**
- ECO 121 - Principles of Macroeconomics **Credits: 3**
- MAT 115 - Applied Mathematics for Business and Economics **Credits: 3**
or
- MAT 116 - Introduction to Calculus **Credits: 3**
or
- MAT 126 - Calculus I **Credits: 4**
- Gen Ed: Applied Science Course
- Gen Ed: Western Cultural Tradition

Second Year - First Semester (15 credits)

- ACC 201 - Principles of Financial Accounting **Credits: 3**
- BIS 267 - Database Management and Security **Credits: 3**
- MGT 220 - The Legal Environment of Business **Credits: 3**
- STS 132 - Principles of Statistical Inference **Credits: 3**
- Gen Ed: Population and Environment

Second Year - Second Semester (16 credits)

- ACC 202 - Principles of Managerial Accounting **Credits: 3**
- MKT 270 - Introduction to Marketing **Credits: 3**
- MGT 325 - Principles of Management and Organization **Credits: 3**
- Gen Ed: Lab or Applied Science
- Gen Ed: Artistic and Creative Expression

Third Year - First Semester (15 credits)

- BIS 267 - Database Management and Security **Credits: 3**
- ENG 317 - Business and Technical Writing **Credits: 3**
- FIN 350 - Business Finance **Credits: 3**
- MGT 343 - Introduction to International Business **Credits: 3**
- Elective
- English Elective

Third Year - Second Semester (15 credits)

- BIS 363 - Information Security Management **Credits: 3**
- MGT 337 - Production and Operations Management **Credits: 3**
- Elective
- Elective
- Elective

Fourth Year - First Semester (15 credits)

- BIS 364 - Business Process Configuration **Credits: 3**
- BISSM Elective
- Gen Ed: Cultural Diversity
- Elective
- Elective

Fourth Year - Second Semester (13 credits)

- BIS 468 - Information Systems Strategy and Security Management **Credits: 3**
- MGT 449 - Strategic Management **Credits: 3**
- Elective
- Elective
- Elective (one credit)

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: A C- or higher is required in all business core classes: MGT 101, ACC 201, ACC 202, MGT 220, BIS 105, BIS 235, MKT 270, MGT 325, MGT 337, MGT 343, FIN 350, and MGT 449 and in ECO 120, ECO 121 and MAT 115 or MAT 116 or MAT 126, PSY 100 and STS 215 or STS 132. Core business courses may be repeated only once, and 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 Business and Economics 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: MGT 449

Course satisfying the Writing Intensive requirement within the major: FIN 351

Contact Information: Patti Miles, 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 and be in good academic standing. 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.

First year finance students may take MGT 101 and BIS 235. Sophomores (24 or more degree hours) may take ACC 201, ACC 202, BIS 105, MGT 325, MGT 220 and MKT 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 Finance majors has three components:

1. The General Foundation (52 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 (34 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 16-19 credits needed to qualify for graduation can be filled with any course offered at the University.

General Foundation (52 credits)

I. Arts and Sciences Core (34 credits)

- CMJ 103 - Public Speaking **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 116 - Introduction to Calculus **Credits: 3**
or
- MAT 126 - Calculus I **Credits: 4**

- STS 215 - Introduction to Statistics for Business and Economics **Credits: 3**
or
- STS 132 - 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 (18 Credits)

These 18 credits may be chosen from the offerings of the College of Liberal Arts and Sciences, 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 (34 credits)

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

- ACC 201 - Principles of Financial Accounting **Credits: 3**
- ACC 202 - Principles of Managerial Accounting **Credits: 3**
- BIS 105 - Excel Fundamentals for Business Analytics **Credits: 1**
- BIS 235 - Digital Business Transformation **Credits: 3**
- FIN 350 - Business Finance **Credits: 3**
- MGT 101 - Introduction to Business **Credits: 3**
- MGT 220 - The Legal Environment of Business **Credits: 3**
- MGT 325 - Principles of Management and Organization **Credits: 3**
- MGT 337 - Production and Operations Management **Credits: 3**
- MGT 343 - Introduction to International Business **Credits: 3**
- MGT 449 - Strategic Management **Credits: 3**
- MKT 270 - Introduction to Marketing **Credits: 3**

Finance (15 Credits)

- FIN 351 - Valuation and Corporate Investment Decisions **Credits: 3**
- FIN 352 - Financial Institutions **Credits: 3**
- FIN 353 - Investment Strategy **Credits: 3**
- FIN 454 - Financial Derivatives and Fixed Income **Credits: 3**

Plus one of the following:

- ACC 301 - Intermediate Accounting I **Credits: 3**
- ACC 312 - Federal Income Taxation **Credits: 3**
- BIS 267 - Database Management and Security **Credits: 3**
- BIS 468 - Information Systems Strategy and Security Management **Credits: 3**
- ECO 266 - Principles of Economic Data Analysis **Credits: 3**
- ECO 221 - Intermediate Macroeconomics **Credits: 3**
- ECO 220 - Intermediate Microeconomic Theory **Credits: 3**
- FIN 455 - International Corporate Finance **Credits: 3**
- FIN 490 - Special Topics in Finance **Credits: 1-3**

Free Electives (19 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 FIN 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)

- BIS 235 - Digital Business Transformation **Credits: 3**
- ECO 120 - Principles of Microeconomics **Credits: 3**
- ENG 101 - College Composition **Credits: 3**
- MGT 101 - Introduction to Business **Credits: 3**
- PSY 100 - General Psychology **Credits: 3**

First Year - Second Semester (15 credits)

- CMJ 103 - Public Speaking **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.

- ACC 201 - Principles of Financial Accounting **Credits: 3**
- MGT 220 - The Legal Environment of Business **Credits: 3**
- STS 215 - Introduction to Statistics for Business and Economics **Credits: 3**
or
- STS 132 - Principles of Statistical Inference **Credits: 3**
- Gen Ed: Population and Environment
- Gen Ed: Lab or Applied Science

Second Year - Second Semester (15-16 credits)

- ACC 202 - Principles of Managerial Accounting **Credits: 3**
- BIS 105 - Excel Fundamentals for Business Analytics **Credits: 1**
- MGT 325 - Principles of Management and Organization **Credits: 3**
- MKT 270 - Introduction to Marketing **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)

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

Third Year - Second Semester (15 credits)

- FIN 351 - Valuation and Corporate Investment Decisions **Credits: 3**
- MGT 343 - Introduction to International Business **Credits: 3**
- Six additional credits
- An English Course

Fourth Year - First Semester (15 credits)

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

Fourth Year - Second Semester (15 credits)

- FIN 454 - Financial Derivatives and Fixed Income **Credits: 3**
- MGT 449 - Strategic Management **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 higher is required in all business core classes: MGT 101, ACC 201, ACC 202, MGT 220, BIS 105, BIS 235, MKT 270, MGT 325, MGT 337, MGT 343, FIN 350, and MGT 449 and in ECO 120, ECO 121 and MAT 115 or MAT 116 or MAT 126, PSY 100 and STS 215 or STS 132. Core business courses may be repeated only once, and 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 Business and Economics 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: MGT 449

Course satisfying the Writing Intensive requirement within the major: MGT 330

Contact Information: Patti Miles, Associate Dean, 211 DP Corbett, (207)581-1968, patti.miles@maine.edu

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 and be in good academic standing. 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.

First year management students may take MGT 101 and BIS 235. Sophomores (24 or more degree hours) may take ACC 201, ACC 202, BIS 105, MGT 220, MKT 270, MGT 290, and MGT 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 (52 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 (34 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 16-19 credits needed to qualify for graduation can be filled with any course offered at the University.

General Foundation - 52 credits

I. Arts and Sciences Core (34 credits)

- CMJ 103 - Public Speaking **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 116 - Introduction to Calculus **Credits: 3**
or
- MAT 126 - Calculus I **Credits: 4**

- STS 215 - Introduction to Statistics for Business and Economics **Credits: 3**
or
- STS 132 - 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 (18 credits)

These 18 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 (34 credits)

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

- ACC 201 - Principles of Financial Accounting **Credits: 3**
- ACC 202 - Principles of Managerial Accounting **Credits: 3**
- BIS 105 - Excel Fundamentals for Business Analytics **Credits: 1**
- BIS 235 - Digital Business Transformation **Credits: 3**

- FIN 350 - Business Finance **Credits: 3**
- MGT 101 - Introduction to Business **Credits: 3**
- MGT 220 - The Legal Environment of Business **Credits: 3**
- MGT 325 - Principles of Management and Organization **Credits: 3**
- MGT 337 - Production and Operations Management **Credits: 3**
- MGT 343 - Introduction to International Business **Credits: 3**
- MGT 449 - Strategic Management **Credits: 3**
- MKT 270 - Introduction to Marketing **Credits: 3**

Management (15 credits)

- MGT 326 - Organizational Behavior **Credits: 3**
- MGT 327 - Business and Society **Credits: 3**
- MGT 330 - Human Resource Management **Credits: 3**

Plus two from the following:

- BIS 267 - Database Management and Security **Credits: 3**
- MGT 328 - Canadian/U.S. Business: A Comparison **Credits: 3**
- MGT 331 - Labor-Management Relations **Credits: 3**
- MGT 335 - Advanced Dispute Resolution: Negotiation, Mediation and Arbitration **Credits: 3**
- MGT 342 - Small Business Management **Credits: 3**
- MGT 344 - Entrepreneurship and New Venture Creation **Credits: 3**
- SPT 250 - Introduction to Sport Management **Credits: 3**
- MGT 445 - International Management **Credits: 3**

Free Electives (19 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 MGT 325 in the sophomore year is assumed.

First Year - First Semester (15 credits)

- BIS 235 - Digital Business Transformation **Credits: 3**
- ECO 120 - Principles of Microeconomics **Credits: 3**
- ENG 101 - College Composition **Credits: 3**
- MGT 101 - Introduction to Business **Credits: 3**
- PSY 100 - General Psychology **Credits: 3**

First Year - Second Semester (15 credits)

- CMJ 103 - Public Speaking **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.

- ACC 201 - Principles of Financial Accounting **Credits: 3**
- MGT 220 - The Legal Environment of Business **Credits: 3**
- STS 215 - Introduction to Statistics for Business and Economics **Credits: 3**
or
- STS 132 - Principles of Statistical Inference **Credits: 3**
- Gen Ed: Population and Environment
- Gen Ed: Lab or Applied Science

Second Year - Second Semester (15-16 credits)

- ACC 202 - Principles of Managerial Accounting **Credits: 3**
 - BIS 105 - Excel Fundamentals for Business Analytics **Credits: 1**
 - MGT 325 - Principles of Management and Organization **Credits: 3**
 - MKT 270 - Introduction to Marketing **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)

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

Third Year - Second Semester (15 credits)

- MGT 327 - Business and Society **Credits: 3**
- MGT 337 - Production and Operations Management **Credits: 3**

- MGT 343 - Introduction to International Business **Credits:** 3
- An English Course Credits: 3
- 3 additional credits

Fourth Year - First Semester (15 credits)

- Management Elective
- 12 additional credits

Fourth Year - Second Semester (15 credits)

- MGT 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 higher is required in all business core classes: MGT 101, ACC 201, ACC 202, MGT 220, BIS 105, BIS 235, MKT 270, MGT 325, MGT 337, MGT 343, FIN 350, and MGT 449 and in ECO 120, ECO 121 and MAT 115 or MAT 116 or MAT 126 and MKT 378 or MKT 382, PSY 100 and STS 215 or STS 132. Core business courses may be repeated only once, and 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 Business and Economics 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: MGT 449

Course satisfying the Writing Intensive requirement within the major: MKT 480

Contact Information: Patti Miles, Associate Dean, 211 DP Corbett, (207)581-1968, patti.miles@maine.edu

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 and be in good academic standing. 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.

First year marketing students may take MGT 101 and BIS 235. Sophomores (24 or more degree hours) may take ACC 201, ACC 202, BIS 105, MGT 220, MGT 325, and MKT 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 Marketing majors has three components:

1. The General Foundation (52 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 (34 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 16-19 credits needed to qualify for graduation can be filled with any course offered at the University.

General Foundation - 52 credits

I. Arts and Sciences Core (34 credits)

- CMJ 103 - Public Speaking **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 116 - Introduction to Calculus **Credits: 3**
or
- MAT 126 - Calculus I **Credits: 4**

- STS 215 - Introduction to Statistics for Business and Economics **Credits: 3**
or
- STS 132 - 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 (18 credits)

These 18 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 (34 credits)

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

- ACC 201 - Principles of Financial Accounting **Credits: 3**
- ACC 202 - Principles of Managerial Accounting **Credits: 3**
- BIS 105 - Excel Fundamentals for Business Analytics **Credits: 1**
- BIS 235 - Digital Business Transformation **Credits: 3**
- FIN 350 - Business Finance **Credits: 3**
- MGT 101 - Introduction to Business **Credits: 3**
- MGT 220 - The Legal Environment of Business **Credits: 3**
- MGT 325 - Principles of Management and Organization **Credits: 3**
- MGT 337 - Production and Operations Management **Credits: 3**
- MGT 343 - Introduction to International Business **Credits: 3**
- MGT 449 - Strategic Management **Credits: 3**
- MKT 270 - Introduction to Marketing **Credits: 3**

Marketing (15 credits)

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

Plus one of the following:

- MKT 372 - Integrated Marketing Communication **Credits: 3**
- MKT 374 - Personal Selling and Sales Management **Credits: 3**
- MKT 376 - International Marketing **Credits: 3**
- MKT 476 - New Product Management **Credits: 3**
- MKT 385 - Digital Marketing **Credits: 3**
- MKT 490 - Special Topics in Marketing **Credits: 1-3**
- SPT 355 - Sport Marketing **Credits: 3**

Free Electives (19 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 MKT 270) are offered only once a year. Taking MKT 270 in the sophomore year is assumed.

First Year - First Semester (15 credits)

- BIS 235 - Digital Business Transformation **Credits: 3**
- ECO 120 - Principles of Microeconomics **Credits: 3**
- ENG 101 - College Composition **Credits: 3**
- MGT 101 - Introduction to Business **Credits: 3**
- PSY 100 - General Psychology **Credits: 3**

First Year - Second Semester (15 credits)

- CMJ 103 - Public Speaking **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.

- ACC 201 - Principles of Financial Accounting **Credits: 3**
- MGT 220 - The Legal Environment of Business **Credits: 3**
- STS 215 - Introduction to Statistics for Business and Economics **Credits: 3**
or
- STS 132 - Principles of Statistical Inference **Credits: 3**
- Gen Ed: Population and Environment
- Gen Ed: Lab or Applied Science

Second Year - Second Semester (15-16 credits)

- ACC 202 - Principles of Managerial Accounting **Credits: 3**
- BIS 105 - Excel Fundamentals for Business Analytics **Credits: 1**
- MGT 325 - Principles of Management and Organization **Credits: 3**
- MKT 270 - Introduction to Marketing **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)

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

Third Year - Second Semester (15 credits)

- MGT 337 - Production and Operations Management **Credits: 3**
- MKT 371 - Services Marketing **Credits: 3**
- Six additional credits
- An English Course

Fourth Year - First Semester (12 credits)

- MKT 378 - Marketing Research **Credits: 3**
- Marketing Elective
- Nine additional credits

Fourth Year - Second Semester (15 credits)

- MGT 449 - Strategic Management **Credits: 3**
- MKT 480 - Managerial Marketing **Credits: 3**
- Nine additional credits

Business Administration in Sport Management

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to graduate: 120

Minimum Cumulative GPA to graduate: 2.0

Minimum Grade requirements for courses to count toward major: A C- or higher is required in all business core classes: MGT 101, ACC 201, ACC 202, MGT 220, BIS 105, BIS 235, MKT 270, MGT 325, MGT 337, MGT 343, FIN 350, and MGT 449 and in ECO 120, ECO 121 and MAT 115 or MAT 116 or MAT 126, SPT 355, SPT 250, PSY 100 and STS 215 or STS 132. Core business courses may be repeated only once, and 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 Business and Economics 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: MGT 449

Course satisfying the Writing Intensive requirement within the major: SPT 250

Contact Information: Patti Miles, Associate Dean, 211 DP Corbett, (207)581-1968, patti.miles@maine.edu

School/Departmental Requirements:

To earn a Bachelor of Science in Business Administration in Sport 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 sport 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. A C- or better is required in all prerequisites to business courses.

Students wishing to transfer from other institutions or from other programs within UM must have a cumulative GPA of 2.0 and be in good academic standing. 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.

First year sport management students may take MGT 101 and BIS 235. Sophomores (24 or more degree hours) may take ACC 201, ACC 202, BIS 105, MGT 220, MGT 325, and MKT 270. Juniors (54 or more degree hours) may take any other 300- or 400-level business courses for which prerequisites have been met unless the course specifies "Senior Standing." Class standing requirements are never waived.

The Business Program for Sport Management majors has three components:

1. The General Foundation (52 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 (34 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 Field (15-18 credits). Students acquire advanced knowledge of a major field (accounting, finance, management, marketing, or sport management) by taking five courses (six in accounting) beyond the introductory level in a chosen major. Concentrations in International Business, Business Information Systems, and Entrepreneurship can be elected in addition to a major.

Note: The remaining 16-19 credits needed to qualify for graduation can be filled with any course offered at the University.

General Foundation - 52 Credits

Arts and Sciences Core (34 credits)

- CMJ 103 - Public Speaking **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 116 - Introduction to Calculus **Credits: 3**
or
- MAT 126 - Calculus I **Credits: 4**
- STS 215 - Introduction to Statistics for Business and Economics **Credits: 3**
or
- STS 132 - 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

Outside Electives (18 credits)

These 18 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 (34 Credits)

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

- ACC 201 - Principles of Financial Accounting **Credits: 3**
- ACC 202 - Principles of Managerial Accounting **Credits: 3**
- BIS 105 - Excel Fundamentals for Business Analytics **Credits: 1**
- BIS 235 - Digital Business Transformation **Credits: 3**

- FIN 350 - Business Finance **Credits: 3**
- MGT 101 - Introduction to Business **Credits: 3**
- MGT 220 - The Legal Environment of Business **Credits: 3**
- MGT 325 - Principles of Management and Organization **Credits: 3**
- MGT 337 - Production and Operations Management **Credits: 3**
- MGT 343 - Introduction to International Business **Credits: 3**
- MGT 449 - Strategic Management **Credits: 3**
- MKT 270 - Introduction to Marketing **Credits: 3**

Sport Management (15 credits)

- SPT 250 - Introduction to Sport Management **Credits: 3**
- SPT 485 - Sport Management Practicum **Credits: 3**
- SPT 355 - Sport Marketing **Credits: 3**

Plus two from the following:

- CMJ 376 - Modes of Media Criticism **Credits: 3**
- ECO 285 - Economics of Sports **Credits: 3**
- KPE 265 - Outdoor and Adventure Activities **Credits: 3**
- KPE 344 - Principles of Coaching **Credits: 3**
- MGT 335 - Advanced Dispute Resolution: Negotiation, Mediation and Arbitration **Credits: 3**
- MKT 374 - Personal Selling and Sales Management **Credits: 3**
- SFR 150 - Introduction to Tourism **Credits: 3**
- SFR 228 - Forest Recreation Management **Credits: 3**
- SPT 290 - Introduction to Topics in Sports Management **Credits: 1-3**
- SPT 490 - Special Topics in Sports Management **Credits: 1-3**

Free Electives (19 Credits)

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

Required Courses in Suggested Sequence for the B.S. in Business Administration in Sport Management

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

First Year - First Semester (15 Credits)

- CMJ 103 - Public Speaking **Credits: 3**
- ECO 120 - Principles of Microeconomics **Credits: 3**
- ENG 101 - College Composition **Credits: 3**
- MGT 101 - Introduction to Business **Credits: 3**

- PSY 100 - General Psychology **Credits: 3**

First Year - Second Semester (15 - 16 Credits)

- BIS 105 - Excel Fundamentals for Business Analytics **Credits: 1**
- BIS 235 - Digital Business Transformation **Credits: 3**
- ECO 121 - Principles of Macroeconomics **Credits: 3**
- MAT 115 - Applied Mathematics for Business and Economics **Credits: 3**
or
- MAT 116 - Introduction to Calculus **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.

- ACC 201 - Principles of Financial Accounting **Credits: 3**
- MGT 220 - The Legal Environment of Business **Credits: 3**
- STS 215 - Introduction to Statistics for Business and Economics **Credits: 3**
or
- STS 132 - Principles of Statistical Inference **Credits: 3**
- Gen Ed: Population and Environment
- Gen Ed: Lab or Applied Science

Second Year - Second Semester (15 - 16 credits)

- ACC 202 - Principles of Managerial Accounting **Credits: 3**
- MGT 325 - Principles of Management and Organization **Credits: 3**
- MKT 270 - Introduction to Marketing **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)

- ENG 317 - Business and Technical Writing **Credits: 3**
- FIN 350 - Business Finance **Credits: 3**
- SPT 250 - Introduction to Sport Management **Credits: 3**
- An English Course Credits: 3
- Three additional credits

Third Year - Second Semester (15 credits)

- MGT 337 - Production and Operations Management **Credits: 3**
- MGT 343 - Introduction to International Business **Credits: 3**
- SPT 355 - Sport Marketing **Credits: 3**
- Six additional credits

Fourth Year - First Semester (15 credits)

- SPT 485 - Sport Management Practicum **Credits: 3**
- Sport Management Elective
- Nine additional credits

Fourth Year - Second Semester (15 credits)

- MGT 449 - Strategic Management **Credits: 3**
- Sport Management Elective 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 higher is required in ACC 201, ACC 202 and ACC 301.

Contact Information: Patti Miles, Associate Dean, 211 DP Corbett, (207) 581-1968

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 ACC credit hours at UMaine. All Accounting classes must be taken for a grade (no pass/fail permitted).

Complete the following Required Courses:

- ACC 201 - Principles of Financial Accounting **Credits:** 3
- ACC 202 - Principles of Managerial Accounting **Credits:** 3
- ACC 301 - Intermediate Accounting I **Credits:** 3
- ACC 302 - Intermediate Accounting II **Credits:** 3
- ACC 305 - Cost Accounting **Credits:** 3
- ACC 310 - Auditing **Credits:** 3
- ACC 312 - Federal Income Taxation **Credits:** 3

Accounting Elective Courses:

Select one of the following courses:

- ACC 315 - Accounting Information System **Credits:** 3
- ACC 406 - Advanced Managerial Accounting **Credits:** 3
- ACC 409 - Accounting for Governmental and Not-For-Profit Entities **Credits:** 3
- ACC 490 - Special Topics in Accounting **Credits:** 1-3

Minor: Business Administration

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 Business and Economics courses.

Minimum Grade requirements for courses to count toward minor: Must earn a minimum of a C- in all required courses for the minor.

Contact Information: Patti Miles, Associate Dean, 211 DP Corbett, (207) 581-1968

- 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 semester of a student's enrollment
- Must earn at least 50% of the Business and Economics credit hours at UMaine
- All Business classes must be taken for credit (no pass/fail permitted)

Complete the following Required Courses:

- ACC 201 - Principles of Financial Accounting **Credits:** 3
- ECO 120 - Principles of Microeconomics **Credits:** 3
- ECO 121 - Principles of Macroeconomics **Credits:** 3
- FIN 350 - Business Finance **Credits:** 3
- MAT 115 - Applied Mathematics for Business and Economics **Credits:** 3
or
- MAT 116 - Introduction to Calculus **Credits:** 3
or
- MAT 126 - Calculus I **Credits:** 4
- MGT 101 - Introduction to Business **Credits:** 3
- MGT 325 - Principles of Management and Organization **Credits:** 3
- MKT 270 - Introduction to Marketing **Credits:** 3
- PSY 100 - General Psychology **Credits:** 3

Students wishing to pursue the MBA

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

- ACC 201 - Principles of Financial Accounting **Credits:** 3
- ACC 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: 21

GPA requirements to earn minor: Must earn a minimum overall GPA of 2.0 in the required Business/Economics courses.

Minimum Grade requirements for courses to count toward minor: Must earn a minimum of a C- in ECO 120, ECO 121, MGT 325, MGT 343 and PSY 100.

Contact Information: Patti Miles, 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:

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

Must earn at least 50% of the MGT and ECO credit hours at UMaine.
All MGT 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:

- ACC 201 - Principles of Financial Accounting **Credits:** 3
- ACC 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: 21

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

Minimum Grade requirements for courses to count toward minor: Must earn a minimum of a C- in MGT 101, MKT 270 and STS 215 or STS 132.

Contact Information: Patti Miles, 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 MKT and ECO credit hours at UMaine.

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

Required Courses:

- MGT 101 - Introduction to Business **Credits:** 3
- MKT 270 - Introduction to Marketing **Credits:** 3
- MKT 371 - Services Marketing **Credits:** 3
- MKT 378 - Marketing Research **Credits:** 3
- MKT 382 - Consumer Behavior **Credits:** 3
- STS 215 - Introduction to Statistics for Business and Economics **Credits:** 3
or
- STS 132 - Principles of Statistical Inference **Credits:** 3

Marketing Elective

One from the following list of courses:

- MKT 372 - Integrated Marketing Communication **Credits:** 3
- MKT 374 - Personal Selling and Sales Management **Credits:** 3
- MKT 376 - International Marketing **Credits:** 3
- MGT 490 - Special Topics in Business Administration **Credits:** 1-3

Division of Lifelong Learning

The Division of Lifelong Learning (DLL) provides a broad spectrum of educational programs and services designed to meet the needs of all learners. DLL brings the University of Maine to all students, regardless of where they are physically or in their educational journey, by supporting them throughout the calendar year and across their lifetimes. DLL meets the needs of individual learners and the State of Maine through programs such as Early College, the Bachelor of University Studies adult degree completion program, UMaineOnline, Summer University and Winter Session, and Travel Study. For further information: umaine.edu/dll or call 207.581.3113.

Bachelor of University Studies

The Bachelor of University Studies (B.U.S.) is UMaine's degree completion program. The program offers four flexible track options for 21st century adults to use college credits they have already completed to earn a bachelor's degree. The program is available part time, full time, on campus, fully online, or a combination to accommodate the needs of the adult learner. The degree requirements also are flexible, providing an excellent opportunity to develop a program of study that includes each student's interests, makes maximum use of existing transfer credits, and is relevant to the student's goals and career interests. For further information: umaine.edu/universitystudies or call 207.581.3143.

Early College Programs

The University of Maine is synonymous with innovative education. UMaine is proud to be the first University of Maine System campus to recognize the importance of online Early College programming through its signature *Academ-e* program. High school students may earn up to 12 credits a year and enroll in course work during fall, spring and summer terms.

Students attending Maine public high schools and registered homeschool students may receive these 12 credits at no costs. A reduced Early College rate is available to all high school students that do not qualify for the Maine tuition waiver (nonresident, international, private school, or paying tuition to attend a public high school). Early College offers the opportunity for high school students to take courses in person, online, at their high school, or in impactful summer coursework and residential programs. High school students have access to multiple Early College tracks designed to make course access purposeful and connect with potential majors, minors, and careers. For further information: umaine.edu/earlycollege or call 207.581.8004.

Summer University

Summer University is an integral part of the University of Maine and of the University's Think 30 initiative. A large number of students take courses each summer on campus and online. Courses are taught by the same faculty who teach during the academic year. Summer University is designed to meet the needs of regularly enrolled college students, educators throughout the state, high school students through Early College and individuals who are looking for personal and professional growth opportunities in a variety of disciplines. Students at UMaine and other collegiate institutions can take advantage of Summer University to make up coursework, or to get ahead in their degree. Early College students and those not engaged in formal study but who wish to attend for general purposes, are also welcome (some courses may have prerequisites). Summer University extends from May to August with many scheduling options. Nearly 900 courses are offered on-campus and online. For further information: umaine.edu/summeruniversity or call 207.581.3143.

Summer University also includes UMaine Summer Programs, which offers a variety of experiences for incoming students focused on providing the support and skills needed to succeed academically at the University of Maine. With programs such as the Summer Start and Early College residential programs, UMaine Summer Programs will help students get a head start on their UMaine career. Whether they are looking to earn college credits early, learn more about the University, meet other new students, or get a quick refresher before the fall semester begins, UMaine Summer Programs has an option to fit students' interests and schedule.

Staff are available to answer any questions, help students enroll, and to provide support to University faculty and staff who are interested in developing new programs. For further information: umaine.edu/summeruniversity, or call 207.581.3143.

Travel Study

The Division of Lifelong Learning collaborates with faculty members to offer travel study opportunities that enhance classroom learning and provide direct contact with diverse cultures in a variety of domestic and international settings. Credit is variable depending upon the length of the course and its academic requirements. Programs have included courses in Ireland, England, Italy, Honduras, Nicaragua, Quebec, Jamaica, Tanzania, France, Cuba, Mexico, Sweden, Russia, The Netherlands, and Croatia. For further information: dll.umaine.edu/travelstudy or call 207.581.3143.

UMaineOnline

UMaineOnline is the premier source for online education in Maine. UMaineOnline provides student and faculty services for all online programs and certificates offered through the University of Maine. Students have access to the same courses and world-class professors as on-campus in a flexible online environment. A dozen undergraduate programs are available fully online.

Online undergraduate programs:

Bachelor of Arts in Economics

Bachelor of Science in Business Administration in Management

Bachelor of Arts in Political Science

Bachelor of Science in Surveying Engineering Technology

Bachelor of University Studies (BUS)

Online undergraduate certificates:

Certificate in Electrical Engineering Technology

Certificate in Surveying Engineering Technology

Minor in Child Development and Family Relations

Online undergraduate minors:

Minor in Labor Studies

Minor in Legal Studies

Minor in Maine Studies

Minor in Political Science

For further information: umaine.edu/online or call 207.581.5858.

Winter Session

Winter Session is an integral part of the University of Maine, and of the University's Think 30 program. Courses are taught by the same faculty who teach during the academic year. Students can take advantage of Winter Session to make up coursework, stay on track or to get ahead in their degree. Those not engaged in formal study at UMaine, but who wish to attend as a non-degree student are welcome to attend (some courses may have prerequisites). All courses are offered in a condensed and intensive fully online 3-week format. Students taking a Winter Session course should be prepared to dedicate 30-40 hours per week on their course. For further information: umaine.edu/wintersession or call 207.581.3143.

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 in UST courses

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

The Bachelor of University Studies (B.U.S.) is UMaine's degree completion program for 21st century 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 accessible through online and/or on-campus coursework. The program can be full-time or part-time depending on the needs of the student.

The B.U.S. curriculum can be totally self-designed, or students may select one of the existing tracks (24 credit hours). The B.U.S. program offers the following track options:

- Labor Studies Track
- Leadership Studies Track
- Maine Studies Track
- Self-design option

With its multiple track options, the B.U.S. program provides an opportunity both for students who would benefit from an individually-designed multidisciplinary 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 2.0 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 (online) 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 may be suspended from degree candidacy for failing to complete an approved plan (Self-design Option students) or falling below the required grade point average. These students 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: <https://umaine.edu/universitystudies/>

Required courses:

- UST 100 - Introduction to the Bachelor of University Studies **Credits: 1**
Offered in an online, 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)

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 Option 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.

The Self-design option 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)

- MGT 331 - Labor-Management Relations **Credits: 3**
- HTY 477 - The American Worker **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**
 - HTY 104 - United States History Since 1877 **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**
 - 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**
 - SWK 330 - Contemporary Issues in Diversity and Pluralism **Credits: 3**
 - WGS 101 - Introduction to Women's, Gender, and Sexuality Studies **Credits: 3**
 - WGS 340 - Transnational Feminisms **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 - Public Speaking **Credits: 3**
- CMJ 345 - SL: Small Group Communication **Credits: 3**
- CMJ 347 - Argument and Critical Thinking **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 - Advanced Innovation Skills **Credits: 4**
- MSL 401 - The Army Officer **Credits: 4**
- NAV 303 - Leadership and Management **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**
- MKT 270 - Introduction to Marketing **Credits: 3**
- MGT 325 - Principles of Management and Organization **Credits: 3**
- MGT 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 - Gender in Communication **Credits: 3**
- CMJ 420 - SL: Health Communication **Credits: 3**
- ECO 154 - 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 402 - Roman History **Credits: 3**
- INV 401 - Systems: Innovation Engineering IV **Credits: 3**
- KPE 209 - Wilderness First Responder **Credits: 3**
- KPE 286 - Introduction to Outdoor Leadership and Facilitation **Credits: 1**
- KPE 311 - Advanced Methods of Instructing Outdoor Activities **Credits: 3**

- KPE 344 - Principles of Coaching **Credits: 3**
- MES 301 - Rachel Carson, Maine, and the Environment **Credits: 3**
- MSL 301 - Training Management and the Warfighting Functions **Credits: 3**
- MSL 302 - Training Applied Leadership in Small Unit Operations **Credits: 3**
- MSL 350 - The Evolution of American Warfare **Credits: 3**
- MSL 402 - Company Grade Leadership **Credits: 4**
- NAV 303 - Leadership and Management **Credits: 3**
- NAV 304 - Leadership and Ethics **Credits: 3**
- NUR 413 - Nursing Care Management of Women, Infants and Families **Credits: 3**
- NUR 416 - Nursing Care Management of Children and Families **Credits: 3**
- NUR 417 - Nursing Care Management of Children and Families Clinical **Credits: 1**
- NUR 444 - Management and Leadership in Health Care System **Credits: 3**
- NUR 453 - Community Nursing Care Management **Credits: 1**
- PAX 290 - Nonviolence: Perceptions and Perspectives **Credits: 3**
- PAX 370 - Building Sustainable Communities **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 Justice **Credits: 3**
- POS 301 - Classical 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**
- PSY 230 - Social Psychology **Credits: 3**
- PSY 251 - Psychology of Motivation **Credits: 3**
- SFR 106 - Introduction to Forest Land Navigation and Technology **Credits: 2**
- SOC 201 - Social Inequality **Credits: 3**
- SOC 329 - Sociology of Gender **Credits: 3**
- SOC 325 - 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 303 - Social Movements, Media and Change **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 (6 credits)

- MES 101 - Introduction to Maine Studies **Credits: 3 ***
Plus one of the following courses:
- HTY 210 - History of Maine **Credits: 3**
- HTY 212 - Geography of Maine **Credits: 3**
or
- GEO 212 - Geography of Maine **Credits: 3**
- MES 201 - The Maine Coast **Credits: 3 ***

Electives

In addition to the required course above, students choose electives from the two lists below to complete a total of 24 credits in the track.

Elective Group 1

Select at least 9 credits from these courses, which have predominantly Maine content:

- BIO 205 - Field Natural History of Maine **Credits: 4 ***
- ENG 244 - Writers of Maine **Credits: 3**
- ENG 429 - Topics in Literature and Language **Credits: 3 ***
- FAS 101 - Introduction to the French cultures of North America **Credits: 3**
- FAS 240 - French Exploration and Settlement of Maine, 1604-1760 **Credits: 3**
- FAS 329 - Topics in Franco American Studies **Credits: 3**
- HTY 210 - History of Maine **Credits: 3**
- HTY 211 - Maine and the Sea **Credits: 3**
- HTY 212 - Geography of Maine **Credits: 3**
or
- GEO 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**

- NAS 230 - Maine Indian History in the Twentieth Century **Credits: 3**
- MES 298 - Topics in Maine Studies **Credits: 3**
- MES 301 - Rachel Carson, Maine, and the Environment **Credits: 3 ***
- MES 350 - Maine Women **Credits: 3 ***
- MES 498 - Advanced Topics in Maine Studies **Credits: 1-3 ***
- NAS 102 - Introduction to Wabanaki Culture, History and Contemporary Issues **Credits: 3**
- POS 362 - Maine Government **Credits: 3**

Elective Group 2

Students may also select up to 9 credits of courses from the list below, which have substantial Maine content:

- ANT 426 - Native American Folklore **Credits: 3 ***
- MGT 328 - Canadian/U.S. Business: A Comparison **Credits: 3**
- ECO 381 - SL: Sustainability Science, Policy, and Action **Credits: 3**
- ENG 238 - Nature and Literature **Credits: 3**
- ENG 429 - Topics in Literature and Language **Credits: 3**
- ERS 102 - Environmental Geology **Credits: 4**
- FAS 200 - SL: Primary Sources in Franco American Studies **Credits: 3**
- HTY 398 - Historical Issues **Credits: 1-3**
- NAS 401 - Advanced Topics in Native American Studies **Credits: 3**
- POS 203 - American State and Local Government **Credits: 3**
- SFR 493 - Sustainable Tourism Planning **Credits: 3**
- SMS 352 - Semester-by-the-Sea: Marine Ecology **Credits: 4**
- SMS 480 - Semester-by-the-Sea: Biology of Marine Invertebrates **Credits: 4**
- WGS 201 - Topics in Women's, Gender, and Sexuality Studies **Credits: 3**

Notes

Courses with an asterisk preceding the number of credits identify the course is being offered online.

Notes

* All Bachelor of University Studies' students in tracks or the Self-design option must complete all other BUS program requirements, University general education requirements, and all other UMaine graduation requirements.

University Wide Academic Programs

Minor

Minor: Innovation

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-

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, Earth, Life and Health Sciences 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:

- INV 121, INV 282, INV 405
- 7 credits of 400 level INV courses or cross-listed course

Possible pathways for 7 credit hours to complete Innovation Minor:

INV 471 Special Topics in Innovation (3-4 cr.) or capstone in a major academic department with innovation skill requirements. This can be easily adapted to any capstone project.

INV 480 Internship in Innovation (1-6 cr.) Innovation internship or this can be an internship in Major academic department and easily adapted to include innovation skills.

INV 490 Independent Study in Innovation (3 cr.) Innovation related project or it could be adapted to experiential learning opportunities with inclusion of Innovation skills.

Students that complete INV 121, INV 282 and INV 405 will receive level 1-3 and micro-credential in Innovation.

Minor: Interdisciplinary Disability Studies

OVERVIEW OF DEGREE REQUIREMENTS

Minimum number of credits required to earn minor: 24

Other GPA requirements to earn minor: 2.0 in all Interdisciplinary Disability Studies Minor courses taken.

Minimum Grade requirements for courses to count toward minor: A grade of C or better in all Interdisciplinary Disability Studies Core Courses (minimum 9 Credits, DIS 300, DIS 400, and DIS 450).

Contact Information: Stephen Gilson, PhD, Professor and Coordinator, Center for Community Inclusion & Disability Studies, The University of Maine, 5717 Corbett Hall, Room 201, Orono, ME 04469-5717, (voice) - 207/581-1263; (fax) - 207/581-1231; V/TTY - 800/203-6957, stephen.f.gilson@maine.edu

The curriculum in Interdisciplinary Disability Studies provides students a means to explore disability within the larger context of diversity and to examine professional practice, scholarship and policy related to persons with disabilities. Administered through the Center for Community Inclusion and Disability Studies, Maine's University Center for Excellence in Developmental Disabilities, Education, Research, and Service (UCEDD), students may enroll in individual courses, DIS 300, 400, 450 (with permission of instructor), 470, 480 and 490 as electives, or in the Minor Interdisciplinary in Disability Studies. The Minor consists of 24 credits distributed among elective courses in three categories: social change, diversity studies, and environmental context; and 3 core interdisciplinary courses taught by faculty with expertise in disability studies, DIS 300, 400, and 450. For complete information about Interdisciplinary Disability Studies, please visit the Coordinator at 201 Corbett Hall, phone (207) 581-1263 or Prof. Stephen Gilson at stephen.f.gilson@maine.edu.

Core Courses (9 credits)

- DIS 300 - Disability: Interaction of Human Diversity and Global Environment **Credits:** 3
- DIS 400 - Disability as Diversity I **Credits:** 3
- DIS 450 - Disability: Population-Environment Diversity **Credits:** 3

Elective Courses (15 credits)

Choose a minimum of one course (3 credits) from each of the three categories listed below.

Environmental Context

Courses that address the full range of contexts in which people live, including virtual, spiritual, and other abstract contexts.

- ANT 431 - Folklore, the Environment and Public Policy **Credits:** 3
- ARH 155 - Art and Visual Culture in the Ancient and Medieval Worlds **Credits:** 3
- ART 120 - 3-D Design **Credits:** 3
- BIO 122 - Biology: The Living Science **Credits:** 3
- MGT 220 - The Legal Environment of Business **Credits:** 3
- MGT 326 - Organizational Behavior **Credits:** 3
- SVT 451 - Survey Business Law **Credits:** 3
- CHF 404 - Selected Topics in Child Development and Family Life **Credits:** 3 *
- *Requires coordinator approval
- CHY 101 - Chemistry for Everyday Living **Credits:** 3

- CMJ 100 - Introduction to Media Studies **Credits: 3**
- CMJ 103 - Public Speaking **Credits: 3**
- CMJ 107 - Communication and the Environment **Credits: 3**
- CMJ 375 - Journalism and Media Law **Credits: 3**
- COS 103 - Introduction to Spreadsheets **Credits: 1**
- ECO 180 - Citizens, Energy & Sustainability **Credits: 3**
- ECO 190 - World Food Supply, Population and the Environment **Credits: 3**
- ECO 433 - Labor Economics **Credits: 3**
- EES 100 - Human Population and the Global Environment **Credits: 3**
- ENG 131 - The Nature of Story **Credits: 3**
- ERS 102 - Environmental Geology **Credits: 4**
- ERS 103 - Dynamic Earth **Credits: 3**
- ERS 108 - Beaches and Coasts **Credits: 3**
- ERS 201 - Global Environmental Change **Credits: 4**
- FAS 120 - People, Places and Pasts **Credits: 3**
- FSN 270 - World Food and Culture **Credits: 3**
- GEO 100 - World Geography **Credits: 3**
- HON 111 - Civilizations: Past, Present and Future I **Credits: 4**
- HON 112 - Civilizations: Past, Present and Future II **Credits: 4**
- HTY 103 - Creating America to 1877 **Credits: 3**
- HTY 213 - History of the Maine Woods **Credits: 3**
- HTY 220 - North American Indian History **Credits: 3**
- HTY 420 - Science and Society Since 1800 **Credits: 3**
- HTY 477 - The American Worker **Credits: 3**
- HTY 480 - Global Environmental History **Credits: 3**
- MES 101 - Introduction to Maine Studies **Credits: 3**
- MUL 202 - The Art of Listening to Music: Historical Survey **Credits: 3**
- NMD 100 - Introduction to New Media **Credits: 3**
- NUR 452 - Community and Population Health **Credits: 3**
- PHI 100 - Contemporary Moral Problems **Credits: 3**
- PHI 104 - Existentialism and Literature **Credits: 3**
- PHI 232 - Environmental Ethics **Credits: 3**
- PHI 240 - Social and Political Philosophy **Credits: 3**
- PHI 244 - Philosophy of Law **Credits: 3**
- PHI 344 - Theories of Justice **Credits: 3**
- PHI 353 - Minds and Machines **Credits: 3**
- POS 100 - American Government **Credits: 3**
- POS 282 - Introduction to American Law **Credits: 3**
- POS 304 - American Political Thought **Credits: 3**
- POS 384 - American Civil Liberties **Credits: 3**
- SMS 108 - Beaches and Coasts **Credits: 3**
- SOC 101 - Introduction to Sociology **Credits: 3**
- CRJ 314 - Law and Society **Credits: 3**
- THE 111 - Introduction to Theatre **Credits: 3**
- WGS 101 - Introduction to Women's, Gender, and Sexuality Studies **Credits: 3**
- WGS 230 - Women, Health, and the Environment **Credits: 3**
- WGS 371 - Border-crossing: Gendered Perspectives on Modern Migration **Credits: 3**

Diversity Studies

Courses that address aspects of human differences.

- ANT 102 - Introduction to Anthropology: Diversity of Cultures **Credits: 3**
- ANT 120 - Religions of the World **Credits: 3**
- ANT 400 - Basic Theory in Cultural Anthropology **Credits: 3**
- ANT 451 - Native American Cultures and Identities **Credits: 3**
- ANT 466 - Economic Anthropology **Credits: 3**
- ARH 100 - Art and Human Experience **Credits: 3**
- ARH 155 - Art and Visual Culture in the Ancient and Medieval Worlds **Credits: 3**
- BIO 208 - Anatomy and Physiology **Credits: 4**
- CAN 101 - Introduction to Canadian Studies **Credits: 3**
- CHF 201 - Introduction to Child Development **Credits: 3**
- CHF 331 - Cognitive Development **Credits: 3**
- CHF 404 - Selected Topics in Child Development and Family Life **Credits: 3**
- CHF 433 - Adolescence **Credits: 3**
- CHF 434 - Adult Development and Aging **Credits: 3**
- CHI 101 - Elementary Chinese I **Credits: 5**
- CMJ 202 - Communication Theory **Credits: 3**
- CMJ 314 - International Media **Credits: 3**
- CSD 130 - Introduction to Communication Sciences and Disorders **Credits: 3**
- CSD 280 - Language Development **Credits: 3**
- CSD 382 - Phonological Development and Phonetics **Credits: 4**
- DIS 300 - Disability: Interaction of Human Diversity and Global Environment **Credits: 3**
- DIS 480 - Independent Project in Disability Studies **Credits: 1-6**
- EHD 202 - Education in a Multicultural Society **Credits: 3**
- ENG 131 - The Nature of Story **Credits: 3**
- ENG 243 - Topics in Multicultural Literature **Credits: 3**
- ENG 246 - American Women's Literature **Credits: 3**
- FRE 102 - Elementary French II **Credits: 3 - 4**
- FRE 202 - Intermediate French II **Credits: 3 - 4**
- FRE 306 - French Conversation and Composition: Global Issues **Credits: 3**
- FRE 315 - Advanced French Conversation **Credits: 3**
- FRE 408 - Twentieth Century French Literature **Credits: 3**
- FRE 463 - Quebec Poetry **Credits: 3**
- FRE 495 - Senior Project in French **Credits: 0-3**
- FSN 270 - World Food and Culture **Credits: 3**
- GER 102 - Elementary German II **Credits: 3**
- GER 204 - Intermediate German II **Credits: 3**
- HBR 102 - Beginning Modern Hebrew II **Credits: 3**
- HTY 110 - Introduction to Modern Latin America **Credits: 3**
- HTY 220 - North American Indian History **Credits: 3**
- HTY 241 - History of Globalization, 1900-Present **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 474 - History of U.S. Foreign Relations II **Credits: 3**

- HTY 480 - Global Environmental History **Credits: 3**
- KPE 270 - Motor Development and Learning **Credits: 3**
- MSL 390 - Cultural Understanding and Language Proficiency **Credits: 3**
- NAS 101 - Introduction to Native American Studies **Credits: 3**
- NAS 102 - Introduction to Wabanaki Culture, History and Contemporary Issues **Credits: 3**
- NAS 270 - Gender in Native American Cultures **Credits: 3**
- NAS 401 - Advanced Topics in Native American Studies **Credits: 3**
- NUR 415 - Socio-Cultural Issues in Health and Health Care **Credits: 3**
- NUR 452 - Community and Population Health **Credits: 3**
- POS 368 - China **Credits: 3**
- POS 467 - African Politics **Credits: 3**
- PSY 208 - Theories of Personality **Credits: 3**
- PSY 212 - Abnormal Psychology **Credits: 3**
- PSY 223 - Psychology of Childhood **Credits: 3**
- PSY 224 - Psychology of Adolescence **Credits: 3**
- PSY 251 - Psychology of Motivation **Credits: 3**
- PSY 350 - Cognition **Credits: 3**
- PSY 361 - Sensation and Perception **Credits: 3**
- PSY 425 - Social Issues in Developmental Psychology **Credits: 3**
- SED 302 - Adapting Instruction for Students with Disabilities **Credits: 3**
- SOC 201 - Social Inequality **Credits: 3**
- SOC 308 - Problems of Violence and Terrorism **Credits: 3**
- SOC 337 - Sociology of Mental Illness **Credits: 3**
- SPA 101 - Elementary Spanish I **Credits: 3**
- SPA 102 - Elementary Spanish II **Credits: 3**
- SPA 204 - Intermediate Spanish II **Credits: 3**
- SPA 410 - Latin American Novel **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**
- 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 110 - Beginning Spoken Russian I **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 140 - Beginning Spoken Russian II **Credits: 3**
- WGS 101 - Introduction to Women's, Gender, and Sexuality Studies **Credits: 3**
- WGS 103 - Introduction to Lesbian, Gay, Bisexual, Transgender, and Queer Studies **Credits: 3**
- WGS 371 - Border-crossing: Gendered Perspectives on Modern Migration **Credits: 3**

Social Changes

Courses that critically address social justice in small groups, communities, systems and intellectual trends.

- AED 474 - SL: Topics in Art Education **Credits: 3**
- ANT 120 - Religions of the World **Credits: 3**
- ART 110 - 2-D Design **Credits: 3**
- ART 270 - Digital Art I **Credits: 3**
- ART 370 - Digital Art II **Credits: 3**
- MGT 220 - The Legal Environment of Business **Credits: 3**
- MGT 325 - Principles of Management and Organization **Credits: 3**
- CHF 200 - Family Interaction **Credits: 3**
- CHF 351 - Human Sexuality **Credits: 3**
- CHF 381 - Family Resource Management **Credits: 3**
- CHF 406 - Introduction to Research Methods in Child Development and Family Relations **Credits: 3**
- CHF 422 - Field Placement in Early Childhood Education **Credits: 3-6**
- CHF 452 - Violence in the Family **Credits: 3**
- CIE 115 - Computers in Civil Engineering **Credits: 3**
- CMJ 100 - Introduction to Media Studies **Credits: 3**
- CMJ 102 - Fundamentals of Interpersonal Communication **Credits: 3**
- CMJ 103 - Public Speaking **Credits: 3**
- CMJ 106 - Storytelling **Credits: 3**
- CMJ 136 - Journalism Writing and Editing **Credits: 3**
- CMJ 261 - Photographic Reporting and Storytelling **Credits: 3**
- CMJ 314 - International Media **Credits: 3**
- CMJ 332 - Public Affairs Reporting and Research **Credits: 3**
- CMJ 380 - Advertising, Media and Society **Credits: 3**
- CMJ 402 - Communication Research **Credits: 3**
- CMJ 403 - Persuasion and Social Influence **Credits: 3**
- CMJ 420 - SL: Health Communication **Credits: 3**
- CMJ 434 - Editorial and Opinion Writing **Credits: 3**
- CMJ 450 - Communication and Technology **Credits: 3**
- COS 120 - Introduction to Programming I **Credits: 3**
- COS 420 - Introduction to Software Engineering **Credits: 3**
- COS 470 - Introduction to Artificial Intelligence **Credits: 3**
- ASL 101 - Elementary American Sign Language I **Credits: 4**
- ASL 102 - Elementary American Sign Language II **Credits: 4**
- ECE 101 - Introduction to Electrical and Computer Engineering **Credits: 3 ****
** Relevant Engineering skills course
- ECE 417 - Mobile Robotics **Credits: 3**
- ECE 471 - Embedded Systems **Credits: 3**
- ECO 120 - Principles of Microeconomics **Credits: 3**
- ECO 121 - Principles of Macroeconomics **Credits: 3**
- EDT 400 - Integrating Technology for Teaching and Learning **Credits: 3**
- ENG 206 - Descriptive and Narrative Writing **Credits: 3**
- ENG 280 - Introduction to Film **Credits: 3**
- ENG 309 - Writing Creative Nonfiction **Credits: 3**
- ERL 319 - Teaching Reading and Language Arts in Preschool to Grade 3 **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**
- ESC 452 - Teaching Science in the Secondary School **Credits: 3**
- ESS 315 - Teaching Social Studies in the Elementary School **Credits: 3**
- ESS 441 - Teaching Social Studies in the Secondary School **Credits: 3**
- FSN 301 - Life Cycle Nutrition **Credits: 3**
- FSN 401 - Community Nutrition **Credits: 4**
- HTY 103 - Creating America to 1877 **Credits: 3**
- HTY 311 - Research Seminar **Credits: 3**
- INV 121 - Fundamentals of Innovation **Credits: 3**
- KPE 262 - Methods of Teaching Physical Activity **Credits: 3**
- KPE 344 - Principles of Coaching **Credits: 3**
- KPE 367 - Adapted Physical Education **Credits: 3**
- KPE 400 - General Medical Conditions and Disabilities in Sport **Credits: 3**
- KPE 425 - Health Promotion and Disease Prevention **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**
- MEE 101 - Introduction to Mechanical Engineering **Credits: 1**
- MUE 320 - General Music Methods: Elementary **Credits: 3**
- MUE 321 - General Music Methods: Secondary **Credits: 3**
- NMD 104 - New Media Design **Credits: 3**
- NMD 341 - Documentary Photography and Storytelling **Credits: 3**
- NMD 370 - 3D Modeling and Animation **Credits: 3**
- NUR 415 - Socio-Cultural Issues in Health and Health Care **Credits: 3**
- PAX 250 - Peace and Pop Culture **Credits: 3**
- PAX 451 - Mediation: Its Premises, Practices and Policies **Credits: 3**
- PHI 100 - Contemporary Moral Problems **Credits: 3**
- PHI 103 - Methods of Reasoning **Credits: 3**
- PHI 232 - Environmental Ethics **Credits: 3**
- PHI 235 - Biomedical Ethics **Credits: 3**
- PSY 230 - Social Psychology **Credits: 3**
- SED 302 - Adapting Instruction for Students with Disabilities **Credits: 3**
- SOC 101 - Introduction to Sociology **Credits: 3**
- SOC 220 - Sociology of Deviance **Credits: 3**
- SWK 330 - Contemporary Issues in Diversity and Pluralism **Credits: 3**
- SWK 440 - Social Welfare Policy and Issues **Credits: 3**
- SWK 463 - Generalist Social Work Practice III **Credits: 3**
- SWK 491 - Methods of Social Work Research **Credits: 3**
- THE 117 - Fundamentals of Acting **Credits: 3**

Minor: Labor 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 or better in all Labor Studies core courses (LST 101 and LST 201).

Contact Information: Marc T. Cryer, Director, Bureau of Labor Education, Room 202 Chadbourne Hall, (207) 581-4124, marc.cryer@maine.edu

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. 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; as well as 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:

- HTY 477 - The American Worker **Credits: 3 ***
- LST 298 - Topics in Labor Studies **Credits: 3**
- MGT 331 - Labor-Management Relations **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 104 - United States History Since 1877 **Credits: 3**
- HTY 241 - History of Globalization, 1900-Present **Credits: 3**
- HTY 467 - Early 20th Century America, 1914-1945 **Credits: 3**
- HTY 468 - America Since 1945 **Credits: 3**
- POS 120 - Introduction to World Politics **Credits: 3**
- POS 203 - American State and Local Government **Credits: 3**
- 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
- WGS 340 - Transnational Feminisms **Credits:** 3

Transfer of Elective Courses

A maximum of 9 credits may be 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: 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: Brendan Fahey, Scholarship and Enrollment Advisor, 114 Armory, (207) 581-1125 or (207) 581-1121, UMArmyROTC@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 Advanced Camp at Fort Knox, Kentucky. Students successfully completing their degree requirements and this minor will 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 - Training Management and the Warfighting Functions **Credits:** 3
- MSL 302 - Training Applied Leadership in Small Unit Operations **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 - The Army Officer **Credits:** 4
- MSL 402 - Company Grade Leadership **Credits:** 4

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: Capt Joseph Hendron, UMaine Officer-in-Charge and Marine Officer Instructor, 378 College Ave, 207-581-1551, joseph.hendron@maine.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 Commissioned 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 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 **Credits:** 3
with
- NAV 302 - Naval Operations and Seamanship **Credits:** 3
OR
- NAV 310 - Evolution of Warfare **Credits:** 3
with
- NAV 411 - Fundamentals of Maneuver Warfare **Credits:** 3

Non-Degree Certificates

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 Innovation Engineering in INV 121, advanced skills in INV 180, communicating in INV 282, and commercializing in INV 392.

Eligible students:

Undergraduate students matriculated in any field may take coursework in Innovation Engineering. These students should notify Foster Center for Student Innovation, (207) 581-1454, uminnovation@maine.edu.

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 contacting the Foster Center for Student Innovation. 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 121 - Fundamentals, INV 180 - Create, INV 282 - Communicate, and INV 392 - Commercialize. Courses should be taken in the following order:

- INV 121 Fundamentals
- INV 180 Create
- INV 282 Communicate
- INV 392 Commercialize

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-

Other Programs

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 lifelong education is a necessary and vital component of a democratic society. The Bureau conducts educational programs and research on issues of interest to workers, labor unions and policy makers, topics have included: labor and employment law, labor history, labor relations, political economy, collective bargaining, arbitration and administrative hearing advocacy, mock arbitration, Robert's Rules of Order, union officer training and leadership development. Through teaching, research and public service, the Bureau helps Maine workers and others assess their situation in relation to the global, economic, political and legal environment. The BLE offers an undergraduate Minor in Labor Studies as well as a Labor

Studies Track that is part of the Bachelor of University Studies degree. Labor studies courses include LST 101 - Introduction to Labor Studies, LST 201 - Work and Labor in a Global Environment, and LST 298 - Topics in Labor Studies. For further information: umaine.edu/ble or call 207.581.4124.

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 (TRIO SSS)

TRIO Student Support Services is funded through a U. S. Department of Education grant. Its goal is to increase the retention and graduation rates of low income students, first generation students, and students with disabilities. TRIO SSS serves 400 students each year. Students indicate their interest in services through an interest form filled out online or by visiting our main office in 125 East Annex. Students are then invited to meet with a TRIO staff member to learn more about the program and to complete an application for services. Students are notified of their selection; once selected, services are available throughout that student's college career at UMaine. Services include academic advising, tutoring, peer mentoring, counseling, and workshops. Grants may be available to active first and second year students to reduce unmet need and loans. For further information contact us at (207) 581-2320, TRIO 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 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.

To request a small group tutor, stop by 104 Dunn Hall to fill out the request form and schedule of availability anytime beginning the first week of classes until the eighth week of the semester.

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. Eligibility requirements can be found on the Tutor Program website.

Education Abroad

The University of Maine offers many education abroad opportunities for academic credit. Education abroad leads to self-awareness, skill-building, intercultural understanding, personal growth, and self-sufficiency. For those studying in another language, it can lead to language competency and even fluency. An Education Abroad experience adds depth to a résumé and can give students a competitive edge in the job market as it reflects the ability to adapt, problem-solve, and collaborate in a multicultural environment.

The University of Maine offers several options for education 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. Most programs offer instruction in English, while some may require intermediate language skills. Many offer pre-program or co-curricular language immersion short courses, to support language skills for a semester or year of study in that language. Most UMaine financial aid can be used for all University-approved programs. Additional national and institutional study abroad scholarships are available. Most areas of the world which are rated at advisory levels 1 and 2 according to the US Department of State are available. Countries at advisory levels 3 and 4 are subject to special approval by petition.

For further information, contact the Office of International Programs, where the Study Abroad program is located at 300 Stodder Hall; (207) 581-3437, studyabroad@maine.edu or visit <https://umaine.edu/studyabroad/>

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) 581-1952.

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 Lisa Carter at (207) 581-1359 or lisa.m.carter@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 assist students in any academic major who are interested in a health-professions career regarding options to complete the prerequisite courses typically required for application to the related professional schools. Students may pursue the minor in Pre-Medical Studies outlined below in addition to their major (n.b. some majors with significant overlap are excluded) and some majors offer a concentration in pre-medical studies. Students are not required to enroll in the minor or concentration. To find out more, visit the premed web page at umaine.edu/healthcareers.

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 two special courses for students thinking about a career in the health professions. These 2-credit courses introduce 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 most of the entrance requirements of the majority of professional schools and colleges offering post-baccalaureate programs in the health professions. The STEM/Health Professions Career Consultant can help students research the admission requirements of specific schools. You can view the Minor in Pre-Medical Studies in the Majors/Minors section of this catalog.

STEM/Health Professions Career Counselor

The University of Maine's STEM/Health Professions Career Counselor provides wide-ranging support services to students planning to attend medical school or other professional schools. The STEM/Health Professions Career Counselor

- 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

Connections to Shadowing Opportunities

The Health Professions Office assists students with connecting with area healthcare facilities to match qualified undergraduates with physicians and other regional professionals 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 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 STEM/Health Professions Career Counselor at (207) 581-1359 or um.healthprofessions@maine.edu.

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. 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 the UMaine Army ROTC website.

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 commissioners 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.

The Intensive English Institute

The Intensive English Institute (IEI) of the University of Maine is part of the Office of International Programs. Its primary goal is to provide students the language support and cultural knowledge needed to be successful in achieving their educational and career goals.

The IEI prepares international students and non-native speakers of English for university study at UMaine and other American universities and colleges. It also prepares immigrants to Maine to enter the workforce or improve their career trajectory by helping them improve their English language fluency.

Intensive English courses are offered in five sessions of 7-8 weeks each during the calendar year. Custom courses are also offered for groups based on partner's interest and IEI capacity. In addition to English language courses, the IEI offers academic advising, cross-cultural counseling, tutorials and self-study opportunities in a variety of content and skill areas.

The IEI endorses the TESOL Standards for Post-secondary Programs and the NAFSA Principles of International Educational Exchange. 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. For more information, visit <https://umaine.edu/iei/> or contact um.iei@maine.edu or call 207-581-3821.

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 the Honors College Dean, University of Maine, 5727 Estabrooke Hall, Orono ME 04469-5727. The phone number is (207) 581-3263. Email us at honors@maine.edu or visit our website at honors.umaine.edu

Click the link below to view additional information about the Honors College and its curriculum.

[Honors College](#)

Other Programs

Honors College

The University of Maine offers one of the nation's oldest continuously-running honors programs. Open to students in all majors, the Honors College provides opportunities for motivated students to investigate diverse academic disciplines, to be challenged in a supportive intellectual environment, and to engage enthusiastic fellow students and faculty in thoughtful, provocative discussions. 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 of the program are substantial.

Students and faculty involved in the Honors College come from all areas of the university. As a community of approximately seven 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 Honors College fosters the idea that genuine excellence in college-level studies means substantial competence in areas outside a major field of specialization as well as excellence within it. The Honors curriculum expands students' perspectives by exploring areas of thought beyond their major fields while also providing them opportunities to work in their majors with greater intensity than might be possible within a conventional course pattern. Honors study begins with interdisciplinary breadth and concludes with depth in a major field of study

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 and show curiosity, initiative, and intellectual flexibility in both academic work and extracurricular activities. Incoming first-year students, current UMaine students, and transfer students may also ask to be considered for admission by contacting the Honors College office (honors@maine.edu). Prior to admission, current and transfer students will consult with the associate dean to discuss previous coursework and an appropriate program of study in Honors.

Honors Thesis and Degree Designation

The Honors thesis is a culminating experience of independent scholarship in the Honors College. An Honors student's thesis work is evaluated after the completion of their thesis defense. The level of honors [Honors, High Honors, Highest Honors]

awarded depends on the quality of the written thesis and the Reading List, as well as the student's discussion of these elements at the oral defense. The honors designation appears on both the student's diploma and on the transcript; the thesis title also appears on the transcript. More information on the Honors thesis can be found at honors.umaine.edu.

College and University Requirements

Successful completion of the Honors 18-credit core curriculum which comprises HON 111, HON 112, HON 211, HON 212, and two of the three cultural and civic engagement experiences (HON 170, HON 175, and HON 180) satisfies all of the undergraduate General Education Human Values and Social Context and Ethics requirements. 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). HON 211 and HON 212 are also designated as Writing Intensive. In practice, this means that students who complete the Civilizations sequence and two of the three cultural and civic engagement 1-credit courses (HON 170, HON 175, and HON 180) have satisfied all of the university's general education requirements with the exception of mathematics (Quantitative Literacy) and science (General Education Science). Additionally, 300-level Honors tutorials satisfy at least one of the Human Values and Social Contexts requirements.

A C or better is required in all Honors courses to satisfy the requirements of the Honors College. These courses may be repeated once for credit.

The Honors College monitors the GPAs of its students. Those who fall below a 3.30 GPA are cautioned based upon a set of GPA thresholds for each cohort (first-year through senior). The caution ranges are based on the credits remaining to graduation that can reasonably be used to restore a student's GPA back to the 3.30 GPA required for graduation in Honors: 2.7 to 3.0 at end of first year; 3.0 to 3.15 at end of second year; 3.15 to 3.30 at end of third year. Students in each cohort who fall below the lower threshold will be separated from the Honors College, but have the option to appeal for reinstatement.

In addition to successfully completing all the required Honors College courses, a minimum cumulative GPA of 3.30 is required to graduate with Honors.

In many majors, the Honors thesis will satisfy the "capstone" general education requirement. Some departments also allow HON 499 to satisfy the requirement for a writing intensive course in the major or to serve as a technical elective. For specific information, students should contact their department chair or consult with their major advisor.

Further information about the Honors College can be found at honors.maine.edu. The Honors College can be reached by email at honors@maine.edu; by phone at (207) 581-3263; or by mail at The Honors College, University of Maine, 5716 Colvin Hall, Orono ME, 04469-5716.

Curriculum

The Honors College requires its students to complete the four, four-credit seminar courses HON 111, HON 112, HON 211, and HON 212; ; two of the following three cultural and civic engagement one-credit courses: HON 170, HON 175, or HON 180; one Honors tutorial (HON 3xx) or Tutorial Alternative (HON 349); the one-credit thesis preparation course, HON 391, and the Honors Thesis courses (HON 498 and HON 499). Thus, 25 to 28 credit hours of HON designated coursework are required to graduate with Honors

There is flexibility in the timing of the completion of many of the requirements, but the following outlines a typical path through the Honors curriculum, not including HON 170 and HON 180 which are offered every fall and spring semester and can be taken any time during your undergraduate career. HON 175 is only open to first-year students by application and is only offered in the fall semester.

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)

Civilizations Sequence Semester Table

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.

Two of the following courses: HON 170, HON 175, and HON 180 fulfill the 18 credit requirement.

Third-year

One of:

- HON 3xx - Honors Tutorial, Credits: 3
The Honors College offers diverse, upper-level (typically 3rd year) tutorials with enrollments of 12-14 where a faculty member and students engage in a focused academic inquiry on different topics.
General Education Requirements: varies depending on topic
or
- HON 212 - Civilizations: Past, Present and Future IV **Credits: 4**
or
- HON 349 - Tutorial Alternative Portfolio **Credits: 0**
AND
- HON 391 - Introduction to Thesis Research **Credits: 1**

Fourth-year

- HON 498 - Honors Thesis/Research I **Credits: 3**
(Fall, Spring, and Summer with advisor consent)
- HON 499 - Honors Thesis/Research II **Credits: 3**
(Spring, Fall, and Summer with advisor consent)

Note:

Students are required to take two out of the three following 1-credit courses before graduation.

- HON 170 - Currents and Context **Credits:** 1
- HON 175 - SL: Community Building and Engagement **Credits:** 1
- HON 180 - A Cultural Odyssey **Credits:** 1

Honors Courses focused on Genomics (Optional)

- HON 150 - Phage Genome Discovery I **Credits:** 4
- HON 155 - Genome Discovery II: From DNA to Genes **Credits:** 3
- HON 350 - Honors Seminar **Credits:** 3

Abbreviations

Course Prefixes:

ACC – Accounting
AED - Art Education
ANT - Anthropology
ARA - Arabic
ARH - Art History
ARP - Academic Recovery Program
ART - Art
ASL - American Sign Language
AST - Astronomy
AVS - Animal and Veterinary Sciences
BEN – Bioengineering
BIS - Business Information Systems
BIO - Biological Sciences
BMB - Biochemistry, Microbiology and Molecular Biology
CAN - Canadian Studies
CET - Civil Engineering Technology
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
CRJ - Criminal Justice
CSD - Communication Sciences and Disorders
DAN - Dance
DIS - Disability Studies
ECE - Electrical and Computer Engineering
ECO - Economics
ECP - Engineering Communication Project
EDT - Education-Telecommunications
EEL - Education-Early Literacy
EES - Ecology and Environmental Science
EET - Electrical Engineering Technology
EHD - Education-Human Development
ELL - Education-Language Learning
EMA - Education-Mathematics
ENG - English
ERL - Education-Literacy
ERS - Earth Sciences
ESC - Education-Science
ESS - Education-Social Studies
FAS - Franco American Studies
FIN - Finance
FRE - French
FSN - Food Science and Nutrition
FYS - First-Year Seminar
GEE - General Engineering
GEO - Geography
GER - German
HBR - Hebrew
HCI - Human Computer Interaction
HON - Honors
HTY - History
HUD - Human Development

IEI - Intensive English Institute
IMD - Intermedia
INA - International Affairs
IND - Independent Study
INT - Interdisciplinary Studies
INV - Innovation Engineering
JST - Judaic Studies
KPE - Kinesiology and Physical Education
LAS - Liberal Arts and Sciences
LAT - Latin
LBR - Library
LDR - Leadership Studies
LST - Labor Studies
MAT - Mathematics
MEE - Mechanical Engineering
MES - Maine Studies
MET - Mechanical Engineering Technology
MGT - Management
MHR - Mental Health Rehabilitation
MKT - Marketing
MLC - Modern Languages and Classics
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
PAX - Peace Studies
PHI - Philosophy
PHY - Physics
POS - Political Science
PPA - Pulp and Paper Technology
PSE - Plant, Soil and Environmental Science
PSY - Psychology
SED - Education-Special Education
SFR - School of Forest Resources
SMS - Marine Sciences
SOC - Sociology
SPA - Spanish
STS - Statistics
SVT - Surveying Engineering Technology
SWK - Social Work
THE - Theatre
UST - University Studies
VOX - Critical Language
WGS - Women's, Gender, Sexuality Studies
WLE - Wildlife Ecology

College Abbreviations:

DLL - Division of Lifelong Learning
EDHD - College of Education and Human Development
EGR - Maine College of Engineering and Computing
ELHS - College of Earth, Life and Health Sciences
LAS - College of Liberal Arts and Sciences
MBS - The Maine Business School

Academic Recovery Program

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)

General Education Requirements:

Prerequisites: Permission.

Course Typically Offered: Spring

Credits: 1

Accounting

ACC 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.

General Education Requirements:

Prerequisites: Sophomore Standing or Accounting Majors

Course Typically Offered: Fall & Spring

Credits: 3

ACC 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.

General Education Requirements:

Prerequisites: ACC 201 with a C- or higher.

Course Typically Offered: Fall & Spring

Credits: 3

ACC 290 - Introduction to Topics in Accounting

Introduces students to aspects of the Accounting discipline. Special topics may include areas relevant to any aspect of accounting at an introductory level. This course may be repeated for credits.

Prerequisites: Business Major or Minor

Course Typically Offered: Variable

Credits: 1-3

ACC 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.

General Education Requirements:

Prerequisites: A grade of C- or better in ACC 202, sophomore standing.

Course Typically Offered: Fall & Spring

Credits: 3

ACC 302 - Intermediate Accounting II

A continuation of ACC 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: Writing Intensive

Prerequisites: A grade of C- or better in ACC 301; sophomore standing.

Course Typically Offered: Spring & Fall

Credits: 3

ACC 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.

General Education Requirements:

Prerequisites: Junior Standing and a grade of C- or better in ACC 202.

Course Typically Offered: Fall

Credits: 3

ACC 310 - Auditing

This course focuses on understanding auditing and assurance services. It examines the public accounting profession, auditing standards, and professional ethics. It introduces the student to a variety of auditing procedures and to the steps taken by public accounting firms in conducting audits, including audit data analytics (ADA). It discusses different potential problems that auditors face in completing audit assignments using illustrative cases. It provides an opportunity for students to study auditing concepts and theory at an intermediate level by examining a number of risk assessment issues. Finally, it covers material pertinent to the audit section of the Certified Public Accountant (CPA) examination.

General Education Requirements:

Prerequisites: A grade of C- or better in both ACC 301.

Course Typically Offered: Fall

Credits: 3

ACC 312 - Federal Income Taxation

A study of federal income tax laws as they affect individuals and businesses. The course takes a conceptual approach to understanding income tax principles such as gross income, exclusions, deductions, credits, capital gains and losses, property transactions, and other investment and business issues. The course provides a detailed coverage of individual income tax, along with an introductory coverage of other entities including corporations, partnerships and S corporations.

General Education Requirements:

Prerequisites: A grade of C- or better in ACC 202, junior standing.

Course Typically Offered: Fall

Credits: 3

ACC 315 - Accounting Information System

This course is an introduction to accounting information systems, internal controls, business processes, and data analytics. The course helps students understand the role of accounting in collecting, storing, and communication information for management planning and control. It also provides students with hands-on experience in using some data analytical tools to manage and analyze data. If this course was taken under as a topics course in ACC 490, it cannot be repeated for credit.

Prerequisites: Sophomore standing and a grade of C- or better in ACC 202

Course Typically Offered: Spring

Credits: 3

ACC 396 - Field Experience/Internship in Accounting

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.)

Course can be repeated 9 completions for a total of 54 of credits

General Education Requirements:

Prerequisites: Business Majors with 2.50 GPA or better; Junior Standing

Course Typically Offered: Fall, Spring, Summer

Credits: 1-6

ACC 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.

General Education Requirements:

Prerequisites: Pre-MBA students only, permission of the Director of the MBA Program.

Course Typically Offered: Summer

Credits: 3

ACC 406 - Advanced Managerial Accounting

This course is a continuation of ACC 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.

General Education Requirements:

Prerequisites: A grade of C- or better in ACC 305; junior standing. Graduate business students can take the course with permission of the instructor.

Course Typically Offered: Spring

Credits: 3

ACC 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.

General Education Requirements:

Prerequisites: A grade of C- or better in ACC 201; junior standing.

Course Typically Offered: Spring

Credits: 3

ACC 490 - Special Topics in Accounting

Study of various aspects of functional areas of accounting. Topics vary depending on faculty and student interests.

Course note: May be repeated 3 completions for a total of 9 credits if the topics differ.

General Education Requirements:

Prerequisites: ACC 202 and Junior Standing

Course Typically Offered: Variable

Credits: 1-3

American Sign Language

ASL 101 - Elementary American Sign Language I

Introduction to American Sign Language syntax, morphology, phonology, history and culture. Focus on dialogue.

General Education Requirements:

Course Typically Offered: Fall, Spring, Summer

Credits: 4

ASL 102 - Elementary American Sign Language II

Continuation of skill building in American Sign Language syntax, morphology, phonology, cultural awareness. Focus on monologue.

General Education Requirements:

Prerequisites: C or better in ASL 101 or permission.

Course Typically Offered: Variable

Credits: 4

Animal and Veterinary Science

AVS 145 - Introduction to Animal Science

Participants will be introduced to the scientific fundamentals of animal sciences, including animal nutrition, genetics and breeding, reproduction, microbiology, health, management of major domesticated animal species, and current topics, including food safety, animal welfare, and sustainable agriculture.

General Education Requirements:

Prerequisites: Animal Science, Zoology, or Sustainable Agriculture major or permission

Course Typically Offered: Fall

Credits: 3

AVS 146 - Introduction to Animal Science Laboratory

Participants will be introduced to foundational applied techniques in animal nutrition, reproduction, and management of major farm animal species relevant to Maine. At the end of the course, students will apply class content to develop an animal business idea and present it to their peers.

General Education Requirements:

Prerequisites: Pre or Co-requisite AVS 145, and Animal and Veterinary Sciences major or permission

Course Typically Offered: Fall

Credits: 1

AVS 196 - Introduction to Equine Cooperative

Introductory field experience in the handling and care of the University of Maine equine herd.

Course Note: May be repeated for credit for 8 completions with a total of 8 credits.

General Education Requirements:

Course Typically Offered: Fall, Spring, Summer

Credits: 0-1

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.

General Education Requirements:

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: Applications of Scientific Knowledge

Prerequisites: BIO 100

Course Typically Offered: Fall

Credits: 3

AVS 249 - Laboratory and Companion Animal Science

An introduction to laboratory and companion animal science. Species covered include dogs, cats, birds, reptiles, amphibians, rodents, ferrets, rabbits, and horses. Topics include characteristics of each species, welfare, uses, anatomy, physiology, behavior, breeding, genetics, nutrition, health, handling, care and career opportunities.

General Education Requirements:

Prerequisites: Grade of C- or higher in AVS 145 and Sophomore standing

Course Typically Offered: Spring

Credits: 3

AVS 254 - Introduction to Animal Microbiomes

This course introduces students to host-associated microbiomes; the genomic collection of bacteria, archaea, fungi, protozoa, and viruses present in a host ecosystem. In each lecture, we will focus on an anatomical location, and discuss the host and environmental pressures which select for the resident microbial community. The material is primarily in animals (mammals, birds, fish, amphibians) but includes some human-specific comparisons. This course will introduce ecological theories (e.g. environmental selection, neutral theory) in the context of microbial communities, the history of host-associated microbiology, and how technology has contributed to or limited our understanding of organisms and their critical role in our health and development. The skill-set objectives includes group discussions, reading scientific literature, and scientific writing in a variety of styles and both technical and non-technical formats.

General Education Requirements: Population and Environment

Prerequisites: BIO 200 or BIO 208 or BMB 155 or BMB 280 or SMS 201; or instructor's permission

Course Typically Offered: Fall

Credits: 3

AVS 267 - Swine Production

Students will be introduced to the scientific fundamentals of small-scale and pastured swine production, including nutrition, genetics, reproduction, health, management, marketing and current topics including food safety, animal welfare and sustainable agriculture.

General Education Requirements:

Prerequisites: AVS 145

Course Typically Offered: Fall, Odd years

Credits: 1

AVS 268 - Pasture Poultry Production

Students will be introduced to the scientific fundamentals of small-scale and pastured poultry production, including nutrition, genetics, reproduction, health, management, marketing and current topics including food safety, animal welfare and sustainable agriculture.

General Education Requirements:

Prerequisites: AVS 145

Course Typically Offered: Fall, Even years

Credits: 1

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.

General Education Requirements:

Prerequisites: Sophomore standing, ANV Major or ANV or EQU Minor; or permission

Course Typically Offered: Fall, Spring, Summer

Credits: 2

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.

General Education Requirements:

Prerequisites: Grade of C- or higher 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.

General Education Requirements:

Prerequisites: AVS 346 or concurrently.

Course Typically Offered: Fall, Spring, Summer

Credits: 2

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.

General Education Requirements:

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.

Course may be repeated for credit.

General Education Requirements:

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 herdsman, make management decisions that affect the day to day operation of the University dairy.

General Education Requirements:

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.

General Education Requirements:

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.) Course note: Maybe be repeated for credits for a total of 9 completions and 144 credits.

General Education Requirements:

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.

Course note: May be repeated for credit for 36 completions and a total of 36 credits.

General Education Requirements:

Prerequisites: AVS 303 or permission.

Course Typically Offered: Fall, Spring, Summer

Credits: 1-4

AVS 401 - Capstone in Animal Science I

An original investigation of a topic 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: Writing Intensive and Capstone Experience Requirements when combined with AVS 402.

Prerequisites: Junior Standing and Pre or Co-requisite of ENG 315 or ENG 317

Course Typically Offered: Fall

Credits: 2

AVS 402 - Capstone 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 CMJ 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.

General Education Requirements:

Prerequisites: Grade of C- or higher in AVS 145 and Junior standing

Course Typically Offered: Fall, Even Years

Credits: 3

AVS 411 - Advanced Aquaculture

Advanced aquaculture will build upon the foundations of the Introduction to Aquaculture course (AVS/SMS 211). Students will be exposed to more advanced concepts including aquaculture engineering and system design; broodstock management; live feeds and algae production; economics and marketing; as well as biosecurity. Application of principles and concepts presented in this class will be emphasized. At the conclusion of this course students should have a firm grasp of critical concepts in aquaculture and be better prepared for careers in private, state, and federal organizations as well as academia. AVS 411 and AVS 511 cannot both be taken for credit.

General Education Requirements:

Prerequisites: AVS 211 or SMS 211, or permission

Course Typically Offered: Spring

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.

General Education Requirements:

Prerequisites: CHY 121 or BMB 207, BIO 208 or BIO 377 or permission.

Course Typically Offered: Spring, Even 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.

General Education Requirements:

Prerequisites: BIO 377 or permission.

Course Typically Offered: Spring

Credits: 3

AVS 446 - Forage Science and Range Management

Participants will be introduced to the biological fundamentals needed for understanding and managing forage and grassland resources used to feed livestock and wildlife.

AVS 446 and AVS 546 cannot both be taken for credit.

General Education Requirements: None

Prerequisites: AVS, SAG, BIO, BOL, or WLE major or permission and Senior Standing

Course Typically Offered: Spring

Credits: 3

AVS 454 - DNA Sequencing Analysis Lab

This course will take students from raw DNA sequencing data through quality assurance, through to data interpretation, statistical analysis, and presentation of the results as a mock scientific article. A background in microbiology, microbial ecology, or genetics would be beneficial. No programming or data analysis experience is required. Students who are performing research may bring their own sequencing data to process in class. Students will become familiar with command-line programs and basic computer programming techniques; understand bioinformatics methods such as quality trimming, assembling contigs, sequence alignment, using reference databases, and statistical comparisons; gain hands-on experience in bioinformatic analysis of DNA sequences using the R platform and its packages; primarily, DADA2, phyloseq, vegan, ggplot2; and be able to apply the knowledge gained in class to other sequence types and programs. Students may bring their own data, or some can be provided. AVS 454 and 554 cannot both be taken for credit.

General Education Requirements: Quantitative Literacy

Prerequisites: AVS 254 or BIO 319 or Bio 350 or BMB 280 or WLE 200 or SMS 300, and STS 232 or STS 215; or instructor's permission

Course Typically Offered: Fall

Credits: 2

AVS 455 - Animal Nutrition

An increased efficiency of nutrient use is not only imperative for achieving profitability in the currently globalized livestock markets, but also for the sustainable use of natural resources and climate change mitigation. Considering that around 70% of the costs of raising animals is due to feeding and that global demand for animal products is increasing, understanding the basic foundations of animal nutrition is essential for professionals that work with livestock, poultry, companion animals, and wildlife. This course will cover the biochemistry of nutrient use, gastrointestinal physiology and metabolism, feedstuff nutritional analysis, mathematical modeling of nutrient requirements, and the life-cycle of feeding animals. AVS 455 and AVS 555 cannot both be taken for credit.

General Education Requirements:

Prerequisites: Junior Standing; BMB 208 and BMB 210 or CHY 122 and CHY 124, and BIO 200 or BIO 208 or SMS 201

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.

General Education Requirements:

Prerequisites: AVS 455

Course Typically Offered: Spring

Credits: 2

AVS 477 - Zoonoses and Animal Health

This course focuses on the ecology, evolution and epidemiology of infectious diseases from a One Health perspective that considers wild and domestic animals, public health and ecosystem health. Core biological principles as well as ecological and social issues will be explored. The historical and contemporary literature in disease ecology and evolution as it relates to animal health will be reviewed, with an emphasis placed on wildlife and livestock diseases. Additional topics covered include the factors driving heterogeneity in disease transmission in animal populations, the ecology of disease spillover in wildlife and livestock, host-pathogen evolution, antibiotic resistance, and animal disease management strategies. AVS 477 and AVS 577 cannot both be taken for credit.

General Education Requirements:

Prerequisites: Senior Standing and AVS 437, BIO 319, SMS 300 or WLE 200

Course Typically Offered: Fall

Credits: 3

AVS 480 - Physiology of Reproduction

Comparative development and functions of the reproductive process in domestic animals. Lec 3.

General Education Requirements:

Prerequisites: Junior standing and Pre- or Co-requisite of BIO 377

Course Typically Offered: Fall

Credits: 3

Anthropology

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: Social Contexts and Institutions and Cultural Diversity and International Perspectives

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: Ethics and Cultural Diversity and International Perspectives

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: Social Contexts and Institutions and Cultural Diversity and International Perspectives

Course Typically Offered: Fall, Spring, Summer

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: Cultural Diversity and International Perspectives

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: Applications of Scientific Knowledge

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: Population and the Environment and Cultural Diversity and International Perspectives

Course Typically Offered: Alternate years

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: Western Cultural Tradition and the Cultural Diversity and International Perspectives

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: Population and Environment

Prerequisites: Sophomore standing

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: Population and the Environment

Course Typically Offered: Alternate years

Credits: 3

ANT 240 - Hollywood Archaeology

Archaeology is the systematic study of the past, particularly (but not exclusively) for times and places when and where writing did not exist. Many people find the ancient past romantic and exciting. Consequently, many movies purport to be about, or to involve, archaeology and archaeologists and/or the prehistoric past. Very often, movies propagate perspectives on the past and on the practice of archaeology that diverge widely from what archaeologists do and have learned. Often, movies portray archaeologists acting unethically. In this class, we will discuss the use and abuse of archaeology in Hollywood movies, how to recognize inappropriate and unethical archaeological behavior, what sort of stereotypes about archaeology and archaeologists these movies transmit, and how film might be a medium for a better presentation of archaeology and prehistory. If this course was taken as a topics course in ANT 290, it cannot be repeated for credit.

General Education Requirements:

Course Typically Offered: Spring

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: Cultural Diversity and International Perspectives and Ethics

Course Typically Offered: Alternate Years

Credits: 3

ANT 247 - Animals across Cultures

How do diverse cultures conceptualize and treat non-human animals? How are animals understood and acted upon? Our readings are drawn from anthropology, anthrozoology, the biological sciences, neuroscience, comparative psychology, sociology, history, and science journalism. Cross-cultural and transhistorical comparisons invite us to re-conceptualize how we relate to animals under conditions of human exceptionalism, while providing a deeper sense of agency and urgency in how we reimagine stewardship of our shared and imperiled planet.

General Education Requirements: Ethics and Cultural Diversity or International Perspectives

Course Typically Offered: Spring

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: Ethics', 'Social Contexts and Institutions and Cultural Diversity and International Perspectives

Course Typically Offered: Variable

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: Population and the Environment and Cultural Diversity and International Perspectives

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: Cultural Diversity and International Perspectives and Social Contexts and Institutions

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: Social Contexts and Institutions and Cultural Diversity and International Perspectives

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: Applications of Scientific Knowledge

Course Typically Offered: Alternate Years

Credits: 3

ANT 261 - Islamic Fundamentalism

A survey of the distinctive ideological and social features of Islamic fundamentalist movements.

General Education Requirements: Social Contexts and Institutions and Cultural Diversity and International Perspectives

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 Americans, and Native Americans.

General Education Requirements: Social Contexts and Institutions and Cultural Diversity and International Perspectives

Course Typically Offered: Variable

Credits: 3

ANT 285 - Introduction to Historic Preservation

This course introduces students to the theory, history, legal framework, and cultural contexts of historic preservation. It focuses primarily on historic preservation in the United States with reference to historic preservation topics worldwide. From UMaine's Lord Hall to Stonehenge, students will explore historic places through an anthropological lens in order to understand why and how humans preserve heritage-based places. The course is designed to give students a basic knowledge of U.S. historic preservation laws, policies, and practices. It also encourages students to think critically about social behavior surrounding place-based heritage.

General Education 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 if topics differ.

General Education Requirements:

Course Typically Offered: Variable

Credits: 1-3

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.

General Education Requirements:

Course Typically Offered: Variable

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.

General Education Requirements:

Prerequisites: Any ANT or GEO course or permission.

Course Typically Offered: Spring

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: 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 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: Western Cultural Tradition and Cultural Diversity and International Perspectives

Course Typically Offered: Not Regularly Offered

Credits: 3

ANT 350 - Mediterranean Ancient Landscapes Modern World

Humans are active agents in the physical world and play a pivotal role in its transformation. Consequently, contemporary societies inherit landscapes that are the product of an integrated, long-term relationship between humans and their environment through time. This is of particular interest in the Mediterranean world not only because cultural complexity, urbanization, and the origins of nation-states and empires unfolded over the course of millennia, but also because of the rich historical, archaeological, and paleoenvironmental records that help to characterize this process. This course introduces the ways in which archaeology and other historical sciences can inform on contemporary issues of resource management, conservation and cultural heritage in the Mediterranean in the context of the global change.

General Education Requirements:

Prerequisites: One ANT course or one GEO course or Permission

Course Typically Offered: Alternate Years

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.

General Education Requirements:

Prerequisites: ANT 101 or ANT 207 or ANT 317 or Permission

Course Typically Offered: Alternate Years

Credits: 3

ANT 390 - Topics: Travel Study in Anthropology/Geography

Experiential learning in Anthropology/Geography through travel study. Topics and geographical regions of study will vary from statewide, to national, to international interests.

Prerequisites: Instructor Permission

Course Typically Offered: Summer

Credits: 1-6

ANT 400 - 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: Social Context and Institutions' , 'Cultural Diversity and International Perspectives and Writing Intensive

Prerequisites: Permission, and ANT 102 and ANT major standing.

Course Typically Offered: Fall

Credits: 3

ANT 410 - Human Dimensions of Climate Change

Surveys advanced topics on the human dimensions of climate change, including anthropogenic drivers and consequences of climate change, mitigation, and adaptation strategies.

General Education Requirements: Population and Environment and Capstone

Prerequisites: ANT 102 and ANT 225 or permission.

Course Typically Offered: Spring

Credits: 3

ANT 426 - Native American Folklore

An overview of folklore and folklife covering various genres of traditional expressive culture.

General Education Requirements: Cultural Diversity and International Perspectives

Course Typically Offered: Fall

Credits: 3

ANT 428 - Museum Anthropology

This course examines the transforming role of the ethnographic museum. It explores ethnographic collections as institutions where structural inequalities are perpetuated, but also as emergent domains of restitution, decolonization, and community engagement.

Prerequisites: Previous lower-level coursework in anthropology strongly recommended

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: Social Contexts and Institutions and Cultural Diversity and International Perspectives

Prerequisites: ANT 102 or NAS 101 or permission

Course Typically Offered: Alternate Years

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: Population and the Environment

Course Typically Offered: Spring

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: Writing Intensive

Prerequisites: ANT 102 or permission.

Course Typically Offered: Variable

Credits: 3

ANT 451 - Native American Cultures and Identities

In this seminar, we will examine Native American cultures and identities (past and present), with special attention to reading works by Native authors and examining topics such as the effects of colonialism on Native Americans, representations of Native Americans in popular culture, new biological technologies like DNA testing that shape understandings of Native identities, the role of traditional cultures in Native communities, tribal sovereignty and economic development in the twenty-first century, and indigenous environmental perspectives.

General Education Requirements: Cultural Diversity and International Perspectives

Prerequisites: ANT 102 or NAS 101 or permission.

Course Typically Offered: Variable

Credits: 3

ANT 460 - Research Design & Methods

This seminar course for upper level undergraduate students emphasizes the integration of social science theories and methods for the development of research proposals. In this course, students define a research problem, identify a set of research questions or hypotheses, and design a plan of action to carry out their own research. In the process, students become familiar with research ethics, IRB protocols, and a suite of methodological tools used by anthropologists and others to produce social science research. In-class discussions allow students to critically assess benefits and limitations of various field methods, qualitative vs. quantitative approaches, and analytical techniques. In-class workshops allow students to discuss their own research ideas on a regular basis with classmates and instructor. By the end of the course, students will have an understanding of the research process while gaining hands-on experience designing, researching, writing, and presenting their work while building relationships with faculty and peers. The course will allow students to engage in anthropological inquiries and debates while honing skills in communication, argumentation, and problem solving that will be useful beyond the classroom.

General Education Requirements: Capstone and Writing Intensive

Prerequisites: Permission is required. Junior or Senior standing in the Anthropology or International Affairs (CCG concentration) or Human Dimensions of Climate Change majors.

Course Typically Offered: Spring

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. ANT 464 and 564 cannot both be taken for degree credit.

General Education Requirements: Social Contexts and Institutions', 'Population and the Environment', 'and Writing Intensive

Prerequisites: ANT 102 or ANT 250 or Permission

Course Typically Offered: Fall

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. ANT 466 and ANT 566 cannot both be taken for degree credit.

General Education Requirements: Social Contexts and Institutions and Writing Intensive

Prerequisites: ANT 102 or ANT 300 or permission.

Course Typically Offered: Variable

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: Writing Intensive

Prerequisites: ANT 101 or ANT 170 or ANT 207 or Permission

Course Typically Offered: Alternate Years

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. Course note: may be repeated 9 completions with a total of 54 credits

General Education Requirements: Applications of Scientific Knowledge and Cultural Diversity and International Perspectives

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: Basic or Applied Sciences

Prerequisites: ANT 317 or permission.

Course Typically Offered: Not Regularly Offered

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. Lec 1, Lab 2.

General Education Requirements: Applications of Scientific Knowledge

Course Typically Offered: Alternate Years

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 if topics differ.

General Education Requirements:

Course Typically Offered: Variable

Credits: 3

ANT 493 - Anthropology Senior Seminar & Capstone Research Project

This senior research seminar is designed to give students an opportunity to draw on their academic experience and explore a particular anthropological topic or debate of their choice. Throughout the course of the semester, students will conduct research and work toward the completion of a research project. This project will allow students to gain valuable hands-on experience designing, researching, writing, and presenting your work while building relationships with faculty and peers. The course will allow students to engage in anthropological inquires and debates while honing skills in communication, argumentation, and problem solving that will be useful beyond the classroom. Weekly discussions, journal entries, a final project (submitted in stages), and a presentation will be used to assess student progress.

General Education Requirements: Capstone and Writing Intensive

Prerequisites: Junior or Senior standing in the Anthropology or International Affairs (CCG concentration) or Human Dimensions of Climate Change 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.

General Education Requirements:

Prerequisites: ANT 300 or ANT 317 or permission

Course Typically Offered: Alternate Years

Credits: 3

ANT 497 - Department Projects

A special project course. Specific content, scheduling and credit hours proposed by student in consultation with instructor.
Course note: May be repeated 3 completions with a total of 3 credits.

General Education Requirements:

Course Typically Offered: Fall, Spring, Summer

Credits: Ar

Art

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: Artistic and Creative Expression

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.

General Education Requirements:

Course Typically Offered: Fall

Credits: 1

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: Artistic and Creative Expression

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: Artistic and Creative Expression

Course Typically Offered: Fall & Spring

Credits: 3

ART 180 - Photography I

A studio art course that explores the fundamentals of black-and-white photography. Students develop an understanding of the 35mm film camera; lighting, composition, and content; film processing and printing in the darkroom; and how photography is a medium of fine art practice and personal expression. Lab 6.

General Education Requirements: Artistic and Creative Expression

Prerequisites: Art majors must have permission of advisor.

Course Typically Offered: Fall & Spring

Credits: 3

ART 182 - Photography and Digital Imaging

A studio art course that explores the fundamentals of digital photography. Students learn the technology of digital imaging, with an emphasis on cameras and software as mediums of expression.

General Education Requirements: Artistic and Creative Expression

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.

General Education Requirements:

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.

General Education Requirements:

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: Artistic and Creative Expression

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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: ART 110 or permission.

Course Typically Offered: Fall & Spring

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.

General Education Requirements: Artistic and Creative Expression

Prerequisites: ART 110 or permission.

Course Typically Offered: Fall and Spring

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.

General Education Requirements:

Prerequisites: ART 220

Course Typically Offered: Fall & Spring

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.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: ART 240.

Course Typically Offered: Fall & Spring

Credits: 3

ART 350 - Graphic Design II

Continued study of graphic design. Lab 6.

General Education Requirements:

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. Course may satisfy level II requirements in painting, printmaking or sculpture.

Course note: May be repeated for credit for 9 completions with a total of 27 credits if topics differ.

General Education Requirements:

Prerequisites: permission of instructor.

Course Typically Offered: Fall, Spring, Summer

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. Course may satisfy level II requirements in painting, printmaking or sculpture.

Course note: May be repeated for credit for 9 completions with a total of 27 credits if topics differ.

Prerequisites: Department Consent

Course Typically Offered: Fall, Spring, Summer

Credits: 3

ART 370 - Digital Art II

A focus on the creation of two-dimensional and three-dimensional time-based digital art, including both narrative and abstract forms. Teaches the necessary technological learning within the context of artistic creation, professional practices, cultural framing, and critical theory.

General Education Requirements: Artistic and Creative Expression

Prerequisites: ART 270 or permission.

Course Typically Offered: Fall & Spring

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.

May be repeated for credit.

General Education Requirements:

Prerequisites: Junior or Senior Standing and permission

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.

May be repeated for credit.

General Education Requirements:

Prerequisites: Junior or Senior Standing and permission

Course Typically Offered: Fall & Spring

Credits: Ar

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 with 9 total completions and 27 total credits allowed.

General Education Requirements:

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 with a total of 9 completions and 27 credits.

General Education Requirements:

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 with a total of 9 completions and 27 credits.

General Education Requirements:

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.

Course note: May be repeated for credit if topics differ with a total of 9 completions and 27 credits

General Education Requirements:

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. May be repeated for credit.

General Education Requirements:

Prerequisites: Junior or Senior Standing and 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.

Course Note: May be repeated for credit.

General Education Requirements:

Prerequisites: Junior or Senior Standing and permission

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.
Course Note: May be repeated for credit.

General Education Requirements:

Prerequisites: Junior or Senior Standing and permission

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: Capstone Experience and Writing Intensive Requirements

Prerequisites: Junior or senior standing.

Course Typically Offered: Fall

Credits: 3

Art Education

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.

General Education Requirements:

Prerequisites: EHD 202 & EHD 203; 21 credits in Studio Art; 12 credits in Art History; 15 credits of General Education requirements.

Corequisites: 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: Writing Intensive

Prerequisites: Sophomore standing or higher; AED Major; ART 100, ART 110, ART 120, ART 200, ARH 155 and ARH 156

Course Typically Offered: Spring

Credits: 3

AED 373 - Introduction to Curriculum

Introduction to art curricula strategies and development. Includes instructional planning, lesson writing and organization, and practicum experience. Lec 2, Lab 1.

General Education Requirements:

Prerequisites: AED Majors or Certification Students

Corequisites: AED 371

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.

General Education Requirements:

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.

Course note: May be repeated 9 completions for a total of 27 credits if topics differ.

General Education Requirements:

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.

May be repeated for credits.

General Education Requirements:

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.

Course may be repeated for credit.

General Education Requirements:

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.

Course Note: Course may be repeated for credit.

General Education Requirements:

Prerequisites: AED 371, AED 372, AED 373 or equivalents and permission.

Course Typically Offered: Fall & Spring

Credits: Ar

Art History

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: Cultural Diversity and International Perspectives and Artistic and Creative Expression

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: Western Cultural Tradition, 'Cultural Diversity and International Perspectives and Artistic and Creative Expression

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: Western Cultural Tradition and Artistic and Creative Expression

Course Typically Offered: Fall & Spring

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: Western Cultural Tradition', 'Artistic and Creative Expression and Cultural Diversity and International Perspectives

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, focusing 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: Western Cultural Tradition and Cultural Diversity and International Perspectives

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: Western Cultural Tradition', 'Cultural Diversity and International Perspectives and Artistic and Creative Expression

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: Western Cultural Tradition', 'Cultural Diversity and International Perspectives and Artistic and Creative Expression

Prerequisites: 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.

General Education Requirements: Western Cultural Tradition', 'Cultural Diversity and International Perspectives and Artistic and Creative Expression

Prerequisites: 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: Western Cultural Tradition and the Artistic and Creative Expression

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.

General Education Requirements:

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.

General Education Requirements:

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: Artistic and Creative Expression and Western Cultural Tradition

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: Western Cultural Tradition and Artistic and Creative Expression

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.

Course note: May be repeated for 9 completions with a total of 27 credits

General Education Requirements: Social Contexts and Institutions', 'Cultural Diversity and International Perspectives and Artistic and Creative Expression

Course Typically Offered: Variable

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.

Course note: May be repeated for credit up to 9 completions with a total of 27 credits, if topics differ.

General Education Requirements: Cultural Diversity and International Perspectives', 'Artistic and Creative Expression and Writing Intensive

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.

Course note: May be repeated for credit.

General Education Requirements:

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.

Course note: May be repeated for credit.

General Education Requirements:

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: Western Cultural Tradition and Writing Intensive

Prerequisites: Any 200 level ARH course or permission

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: Western Cultural Tradition and Writing Intensive

Prerequisites: Any 200 level ARH course or permission

Course Typically Offered: Variable

Credits: 3

ARH 460 - 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.

Course Note: May be repeated 9 completions with a total of 27 credits if the topics differ.

General Education Requirements: Writing Intensive Requirement.

Prerequisites: Any 200 level ARH course or permission.

Course Typically Offered: Variable

Credits: 3

ARH 461 - Nineteenth-Century Art Research Seminar

Focus on topics selected by instructor in the area of nineteenth-century art and visual culture. Sample topics include the Enlightenment, Neoclassicism and Romanticism; Manet, Modernity, and Modern Art; and Impressionism and Postimpressionism. Students develop projects related to the topic and workshop their research and writing with peers in the seminar. May be repeated for credit.

Course note: May be repeated for credit 2 completions with a total of 6 credits if topics differ.

General Education Requirements: Western Cultural Tradition and Writing Intensive

Prerequisites: ARH 261 or ARH 262 or ARH 263 or ARH 264 or ARH 265 or permission

Course Typically Offered: Alternating years

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.

Course note: May be repeated for credit up to 9 completions and 27 total credits if the topics differ

General Education Requirements: Western Cultural Tradition and Writing Intensive

Prerequisites: ARH 261 or ARH 262 or ARH 263 or ARH 264 or ARH 265

Course Typically Offered: Variable

Credits: 3

ARH 492 - Baroque Research Seminar

Addresses focused 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.

Course note: May be repeated up to 9 completions with a total of 27 credits if the topics differ.

General Education Requirements: Western Cultural Tradition, Artistic and Creative Expression and the Writing Intensive

Prerequisites: ARH 251, or ARH 252, or ARH 253, or ARH 255, or ARH 256, or 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.

Course note: May be repeated up to 9 completions with a total of 27 credits if the topics differ.

General Education Requirements: Western Cultural Tradition, Cultural Diversity and International Perspectives, Artistic and Creative Expression and Writing Intensive

Prerequisites: ARH 251, or ARH 252, or ARH 253, or ARH 255, or ARH 256, or ARH 258, or 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.

Course note: May be repeated up to 9 completions with a total of 27 credits if the topics differ.

General Education Requirements: Western Cultural Tradition, Cultural Diversity and International Perspectives, Artistic and Creative Expression and Writing Intensive

Prerequisites: ARH 251, or ARH 252, or ARH 253, or ARH 255, or ARH 256, or ARH 258, or 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.

Course note: May be repeated up to 9 completions with a total of 27 credits if the topics differ.

General Education Requirements: Western Cultural Tradition and Writing Intensive

Prerequisites: ARH 261 or ARH 262 or ARH 263 or ARH 264 or ARH 265

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. May be repeated for credit.

General Education Requirements:

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.

Course note: May be repeated for credit.

General Education Requirements:

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.

Course note: May be repeated for Credit.

General Education Requirements:

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: Capstone

Prerequisites: Permission.

Course Typically Offered: Fall & Spring

Credits: 3

Astronomy

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: 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 221 - Planetary Systems

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.

General Education Requirements:

Prerequisites: MAT 127, a grade of C- or better in either PHY 112 or PHY 122 or permission.

Course Typically Offered: Variable

Credits: 3

AST 227 - Stars and Galaxies

An introduction to one or more of: stars, galaxies, quasars, and/or cosmology. Not given every year. This course is independent of AST 221 which is not a prerequisite.

General Education Requirements:

Prerequisites: MAT 127, a grade of C- or better in either PHY 112 or PHY 122 or permission.

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.

General Education Requirements:

Prerequisites: MAT 259, a grade of C- or better in PHY 236, PHY 451 and PHY 455 or permission

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.

Course note: May be repeated for credits if the topics differ with a total of 9 completions and 27 credits.

General Education Requirements:

Prerequisites: permission of instructor.

Course Typically Offered: Fall, Spring, Summer

Credits: 1-3

Biochemistry, Microbiology and Molecular Biology

BMB 150 - Phage Genome Discovery I

This inquiry-driven research course provides a hands-on laboratory experience in which students isolate a novel bacteriophage from the environment and characterized the bacteriophage through experimentation. Topics covered include phage biology and bacteriology, gene structure and expression, DNA isolation, restriction digest analysis, agarose gel electrophoresis, and electron microscopy. In this writing intensive course, students will learn effective scientific writing skills through instruction and writing activities and will write a final manuscript to report their research findings. Students also carry out activities and reflective writing assignments that simultaneously teach students both scientific content as well as personal, interpersonal, and critical-thinking skills essential to the practice of science. (HON 150 and BMB 150 are identical courses.)

General Education Requirements: Writing Intensive

Prerequisites: Permission

Course Typically Offered: Fall

Credits: 4

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)

General Education Requirements:

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.

Prerequisites: One year of high school chemistry.

Course Typically Offered: Fall

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: Satisfies the General Education Applications of Scientific Knowledge requirement when taken without BMB 210. When taken with BMB 210, this course satisfies the General Education Lab in the Basic or Applied Sciences requirement.

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.

General Education Requirements:

Prerequisites: A grade of C- or better in BMB 207 and BMB 208 or CHY 121 and CHY 122

Course Typically Offered: Fall

Credits: 3

BMB 222 - Laboratory in Organic Chemistry

Laboratory exercises illustrating the principles presented in BMB 221. Lab 2.

General Education Requirements:

Prerequisites: BMB 221 or concurrent

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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: BIO 100 or HON 150 or BMB 150

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.

General Education Requirements:

Prerequisites: 1 year of biology that includes BIO 100 or BMB 150 or HON 150 and either BIO 200, BMB 155 or HON 155, BIO 208 or BMB 280 and 1 year of chemistry that includes BMB 207, 208, 209 and 210 or CHY 121, 122, 123 and 124.

Course Typically Offered: Fall and 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.

General Education Requirements:

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. BMB 322 and BMB 360 cannot both be taken for credit.

General Education Requirements:

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 or BMB 360. Lab 2, Recitation 1.

General Education Requirements:

Course Typically Offered: Spring

Credits: 2

BMB 360 - Biochemistry for Molecular and Biomedical Sciences

The first major goal of BMB 360 is for students to gain an understanding of the fundamental concepts of biochemistry: properties of the key biomolecules (proteins, enzymes, nucleic acids, carbohydrates, lipids, and their building blocks) and concepts of metabolism and energy production. The second major goal of the course is for students to strengthen their quantitative and analytical problem-solving skills; students will solve many biochemical problems in this class. BMB 360 is geared toward the educational background and future needs of students majoring in Biochemistry, Microbiology, or Molecular and Cellular Biology. BMB 360 and BMB 322 cannot both be taken for credit.

General Education Requirements:

Prerequisites: CHY 251 and Biochemistry or Microbiology or Molecular and Cellular Biology Major

Course Typically Offered: Spring

Credits: 3

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.

General Education Requirements:

Prerequisites: BMB 280 and BMB 322 or BMB 360.

Course Typically Offered: Fall

Credits: 3

BMB 402 - Introduction to Bioinformatics

A multidisciplinary study of fundamental biological questions through the organization, integration and analysis of increasingly large and complex datasets. Topics include primary data repositories, data integration and curation, sequence analysis methods, functional annotation, high-throughput sequence analysis workflows, statistical analysis of gene expression data, clustering methods and modeling biological networks. BMB 402 and BMB 502 cannot both be taken for credit.

General Education Requirements:

Prerequisites: BMB 280 or Permission.

Course Typically Offered: Spring

Credits: 3

BMB 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.

General Education Requirements:

Prerequisites: BMB 300/BMB 305 and BMB 420/BMB 421 suggested. Medical Laboratory Science majors only or permission.

Course Typically Offered: Spring

Credits: 3

BMB 406 - 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 Medical Laboratory Science majors.

Prerequisites: Major of Medical Laboratory Sciences and BMB 322 or BMB 360 and BMB 323

Credits: 4

BMB 409 - Applied Microbiology

Examines applications of microbiology including the principles for control of plant, animal, and human diseases and vectors, bacteriology of probiotics in disease prevention, host-microbe interactions during human and animal vaccine development, microbial roles in bioremediation and composting, and industrial uses of fermentation. Specific focus will be on biological and biochemical characteristics of microorganisms involved in these processes.

General Education Requirements:

Prerequisites: A grade of C- or better in BMB 300

Course Typically Offered: Spring, Alternating

Credits: 3

BMB 415 - Microbiology of Historical Plagues

This course examines the microbiological aspects of the most devastating plagues throughout the history. Emphasis is placed on the life cycles of pathogens, methods of transmission, and the socioeconomic factors that facilitated major disease outbreaks.

General Education Requirements:

Prerequisites: A grade of C- or better in BMB 420

Course Typically Offered: Spring

Credits: 1

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.

General Education Requirements:

Prerequisites: A grade of C- or better in BMB 300 and 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.

General Education Requirements:

Prerequisites: BMB 420 or concurrently.

Course Typically Offered: Spring

Credits: 2

BMB 422 - Clinical Hematology

A comprehensive study of the principles, methodology and pathological states in hematology. Lectures and laboratory practice. Course note: May be repeated two completions with a total of 7 credits.

General Education Requirements:

Course Typically Offered: Every Year

Credits: 7

BMB 423 - Clinical Microbiology

A comprehensive study of the principles and techniques of diagnostic microbiology and parasitology. Lectures and laboratory practice.

Course note: May be repeated for credit with two completions and a total of 7 credits.

General Education Requirements:

Course Typically Offered: Every Year

Credits: 7

BMB 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 note: May be repeated for credit with 2 completions and 7 total credits.

General Education Requirements:

Course Typically Offered: Every Year

Credits: 7

BMB 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)

Course note: May be repeated for credit with 2 completions and a total of 7 credits.

General Education Requirements:

Prerequisites: BIO 421.

Course Typically Offered: Every Year

Credits: 7

BMB 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.)

Course Note: Students will be enrolled in this course for 2 credits for both fall and spring terms for a total of 4 credits for the academic year.

General Education Requirements: Writing Intensive and Capstone

Prerequisites: BIO 421

Course Typically Offered: Every Year

Credits: 4

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 to antigens and antibodies and the lymphocytes involved.

General Education Requirements:

Prerequisites: BMB 300 and either BMB 221 or CHY 251

Course Typically Offered: Spring, Even Years

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.

General Education Requirements:

Prerequisites: BMB 440 or concurrently.

Course Typically Offered: Spring, Even Years

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.

General Education Requirements:

Prerequisites: BMB 300.

Course Typically Offered: Spring, Odd Years

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.

General Education Requirements:

Prerequisites: BMB 455 or concurrently.

Course Typically Offered: Spring, Odd Years

Credits: 1

BMB 460 - Advanced Biochemistry

BMB 460 provides an in depth exploration of selected topics of biochemistry. Course content varies somewhat from year to year but often includes mechanisms of enzyme regulation, control of metabolic pathways, chemical activation of molecules, the mechanisms of signal transduction, and protein structure-function relationships, including their modification, cellular trafficking, and degradation. Investigating some topics through current primary literature provides additional opportunities to improve analytical and integrative thinking skills, and problem solving.

General Education Requirements: Writing Intensive Requirement

Prerequisites: BMB 360 and CHY 252 or permission

Course Typically Offered: Fall

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

General Education Requirements:

Prerequisites: BMB 322 or BMB 360.

Course Typically Offered: 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.

General Education Requirements:

Prerequisites: BMB 460 or concurrently or permission; PHY 122 or 112 or concurrently; and BMB 322 or BMB 360 and CHY 252 and MAT 127

Course Typically Offered: Fall

Credits: 3

BMB 471 - Cell Culture Laboratory

A laboratory course devoted to eukaryotic cell culture techniques and applications. Lab 2.

General Education Requirements:

Prerequisites: BMB 305.

Course Typically Offered: Fall

Credits: 1

BMB 475 - Virus-Host Cell Interactions Discovery Laboratory

This inquiry-based laboratory course gives students an in-depth understanding of virus-host cell interactions through the application of essential techniques and concepts in cell culture, virology, and immunology. Students will develop a scientific toolkit that includes: cell culture, virus infectivity assays, fluorescence microscopy, and other assays such as western blot, flow cytometry, RT-PCR, and sequence analysis. In this authentic laboratory-training environment, students will develop novel hypotheses, write a research proposal outlining their experimental strategy, perform experiments to test their hypotheses and analyze their data, and present their work in lab meetings and written progress reports throughout the semester.

Prerequisites: BMB305, BMB360, and permission

Course Typically Offered: Variable

Credits: 3

BMB 480 - Seminar in Molecular and Biomedical Sciences

Preparation and presentation of papers dealing with current research and development in the field of microbiology, biochemistry and molecular biology.

Course note: May be repeated for credit with 2 completions and a total of 2 credits.

Prerequisites: Majoring in BCH, MCB, or MLB; Junior or Senior Standing

Course Typically Offered: Fall and Spring

Credits: 1

BMB 490 - Molecular Genetics Lab

A laboratory chiefly in the genetics, cell and molecular biology, and biochemistry of *Caenorhabditis elegans*. Laboratory sessions may include *C. elegans* maintenance and culture, microscopy, developmental observation, genetic crosses, fluorescent microscopy, PCR and western blot, and use of disease models.

Prerequisites: BMB 400

Course Typically Offered: Fall

Credits: 3

BMB 491 - Biochemistry, Microbiology and Molecular Biology Research

Research in Biochemistry, Microbiology and Molecular Biology. May be repeated for credit.

General Education Requirements: Capstone

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. May be repeated for credit.

General Education Requirements:

Prerequisites: permission.

Course Typically Offered: Fall & Spring

Credits: Ar

Biology

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

General Education Requirements: Lab in the Basic or Applied Sciences Requirement.

Course Typically Offered: Fall, Spring, Summer

Credits: 4

BIO 122 - Biology: The Living Science

Intended for non-majors, this course 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. This course cannot be applied to Biology, Botany, Zoology, or Medical Laboratory Science major requirements.

Students who have previously passed BIO 100 or a transferred equivalent course cannot enroll in BIO 122, nor enroll in BIO 100 and BIO 122 concurrently.

General Education Requirements: Population and Environmental Sciences. Also together with BIO 123, this course satisfies the General Education Lab in the Basic or Applied Sciences Requirement. If taken without BIO 123, this course satisfies the General Education Applications of Scientific Knowledge Requirement.

Course Typically Offered: Spring

Credits: 3

BIO 123 - Biology: The Living Science Laboratory

A laboratory course, intended for non-majors, focused on examination of the processes and principles of science across disciplines. Exercises are presented from topics such as ecology, evolution and cellular biology. This course cannot be applied to Biology, Botany, Zoology or Medical Laboratory Science major requirements. Lab 2.

General Education Requirements: Together with BIO 122', 'this course satisfies the General Education Lab in the Basic or Applied Science Requirement.

Prerequisites: BIO 122 or concurrently.

Course Typically Offered: Spring

Credits: 1

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: 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: 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: 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 302 - Critical Reading and Verbal Reasoning

Excellent critical reading skills are essential for scientists, social scientists, lawyers, medical personnel, and other professionals. This course will focus on building skills in discerning major themes of written materials, summarizing main points, identifying the intent of writing, and making conclusions. The course will develop students' critical reading and verbal reasoning skills - the ability to analyze, evaluate, and complete arguments as they occur in ordinary language drawn from a wide variety of sources, from science, ethics, philosophy, anthropology, literature, health, psychology, social sciences, and humanities.

General Education Requirements:

Prerequisites: ENG 101 and Sophomore standing

Course Typically Offered: Fall

Credits: 3

BIO 307 - Interdisciplinary Neuroscience

An interdisciplinary overview of the biology of nervous systems, including cellular and molecular biology, physiology, histology, neuroanatomy, modern neuroscience techniques, neurological conditions, and a strong emphasis on transferable scientific skills such as critical thinking, writing, working with data, and reading research literature.

General Education Requirements:

Prerequisites: A grade of C- or better in BIO 200 or SMS 201 or BMB/HON 155; or BIO 100 and PSY 100 and Neuroscience minor; or permission

Course Typically Offered: Fall

Credits: 3

BIO 309 - Sustainability and Conservation Travel Study

The sustainable management of ecosystems is essential for the long-term preservation of biological and cultural natural resources. Today, tropical and subtropical countries are experiencing a variety of unique environmental challenges, all compounded by the effects of global climate change, including loss of biological diversity, invasive species, food insecurity and freshwater scarcity, soaring energy production and storage costs, and accumulation of waste. The scientific solutions to these intractable problems lie in interdisciplinary research efforts. This travel study course examines real-world sustainability and conservation challenges and solutions in an ecosystem under stress due to global climate change. BIO 319 or WLE 200 or SMS 300 are recommended prerequisites.

If this course was taken as a topics course in BIO 387, it cannot be repeated for credit.

General Education Requirements: Population and Environment

Prerequisites: Instructor permission required.

Course Typically Offered: Fall (with travel in winter term)

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: 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 311 - Animal Ecophysiology

Animal ecophysiology is the study of how animal forms and function are shaped by the environment. This course explores the physiological processes of animals with emphasis on energy metabolism, integrative organismal systems, and homeostasis.

General Education Requirements:

Prerequisites: BIO 200 or BIO 208 or SMS 201

Course Typically Offered: Fall, Odd years

Credits: 3

BIO 319 - General Ecology

Ecological principles for the science major including environmental factors, population ecology, community ecology and ecosystem analysis. Course will include field trips during class hours. CHY 122 or BMB 208 recommended.

General Education Requirements:

Prerequisites: BIO 200 or SMS 201

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: Lab in the Basic or Applied Sciences Requirement.

Prerequisites: BIO 100 or PSE 100 or SFR 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. Course will include field trips during class hours.

General Education Requirements: Lab in the Basic or Applied Sciences Requirement.

Prerequisites: BIO 100 or PSE 100 or SFR 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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: BIO 200 or SMS 201

Course Typically Offered: Spring

Credits: 4

BIO 336 - Developmental Biology

Cellular and molecular investigation of how the fertilized egg transforms into an adult individual including study of growth, cell signaling, differentiation, regeneration, and how these topics impact embryonic development and human health.

General Education Requirements:

Prerequisites: BIO 350 previously or concurrently.

Course Typically Offered: Fall

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: Population and the Environment Requirement.

Prerequisites: BIO 200 or permission.

Course Typically Offered: Fall, Even 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.

General Education Requirements:

Prerequisites: A grade of C- BIO 200, or SMS 201, or BMB/HON 155

Course Typically Offered: Fall

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.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: C- or better in BIO 200 or in SMS 201.

Course Typically Offered: Spring

Credits: 3

BIO 365 - Fundamentals of Evolution

The origin and development of evolutionary theory and the mechanisms which bring about the genetic differentiation of groups of organisms. Lec 3.

General Education Requirements:

Prerequisites: BIO 100.

Course Typically Offered: Spring

Credits: 3

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.

General Education Requirements:

Prerequisites: BIO 200 or BIO 208 or SMS 201, and either CHY 122 or BMB 208

Course Typically Offered: Every Fall, Spring, Summer

Credits: 3

BIO 378 - Medical Physiology Laboratory

Experimental analysis of physiological processes. Some animal surgery is involved. Lab 4.

General Education Requirements:

Prerequisites: BIO 311 or 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 applied biological research. (May be repeated for credit until a total of 6 credits have been earned; 3 credits may be used towards the 24 total credits required in the biological science areas.)

General Education Requirements:

Prerequisites: Minimum sophomore standing and departmental consent.

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

Open to students who are interested in independent exploration of biological concepts. May be repeated for credit until a total of 6 credits has been earned, 3 credits may be used towards the 24 total credits required in the biological science areas.

General Education Requirements:

Prerequisites: Departmental Consent.

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.)

General Education Requirements: Writing Intensive and Capstone Experience Requirements (a total of 3 credits are required).

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.

May be repeated for credit. (Pass/Fail Grade Only.)

General Education Requirements:

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: Writing Intensive

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: Writing Intensive and Capstone

Prerequisites: Senior standing in Biology, Botany or Zoology.

Course Typically Offered: Spring

Credits: 3

BIO 411 - Insect Ecology

The course covers fundamental concepts in ecology as they apply to insects on population, community, and ecosystem levels. Students will learn about intricate interactions between insects and their environment and about insect contribution to maintaining diversity of life on Earth. BIO 411 and BIO 511 cannot both be taken for credit.

General Education Requirements:

Prerequisites: BIO 326 or BIO 327

Course Typically Offered: Spring, odd years

Credits: 3

BIO 429 - Plant-Insect Interaction

Herbivorous insects and their host plants represent a prime example of coevolution - the populations of interacting species acting as selective agents of adaptation for one another. This course will discuss the many ways in which insects exploit woody and herbaceous plants, and how these interactions can benefit or adversely affect plant growth, survival, and competition. In addition, the course reviews the mechanisms involved with plant-insect interactions, including those related to chemical defenses, behaviors, adaptations, and management. BIO 429 and BIO 529 cannot both be taken for credit.

Prerequisites: BIO 200 or BIO 326 or PSE 100 or SFR 100 or permission of instructor

Course Typically Offered: Spring, alternating years

Credits: 3

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.

General Education Requirements:

Prerequisites: BIO 200 or BIO 326 or BIO 327 or SMS 201 or permission

Course Typically Offered: Fall, Odd Years

Credits: 4

BIO 431 - Emerging Infectious Diseases

Recent decades have seen a sharp increase in infectious diseases new to humans (e.g., SARS, HIV/AIDS, Zika virus), accompanied by a resurgence of older diseases (e.g., tuberculosis, malaria) as new threats. At the same time, the "golden age" of belief that the war against infectious disease has been won by antibiotics is rapidly fading as pathogens evolve resistance to drug therapies. Emerging and re-emerging infectious diseases (EIDs) greatly concern the scientific, medical, and public health communities and the general public, are inextricably linked to global politics and socio-economic conditions, and arouse controversy, fear, and blame. The goal of this course is to understand EIDs and realistically evaluate the threat to human well-being posed by infectious disease in modern society. Lec 3. Lab 3

General Education Requirements: Writing Intensive and Capstone

Prerequisites: Junior Standing and BIO 200 or BIO 208

Course Typically Offered: Spring, even 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. (Because of overlap, BIO 432 and BIO 532 cannot both be taken for degree credit.) Course will include field trips during class hours and on weekends.

General Education Requirements: Lab in the Basic or Applied Sciences

Prerequisites: BIO 100 and BIO 200 and sophomore or higher standing; 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.

General Education Requirements:

Prerequisites: BIO 329 or permission.

Course Typically Offered: Spring

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.

General Education Requirements:

Prerequisites: STS 232 or WLE 220, and BIO 200 or SMS 201, and 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.

General Education Requirements:

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: Capstone Experience and Writing Intensive

Prerequisites: BIO 200 or SMS 201 and Junior or Senior Standing

Course Typically Offered: Fall, even years

Credits: 3

BIO 450 - Histology

Microscopic anatomy of animal tissues. Lec 2, Lab 4. Course will include field trips during class hours.

General Education Requirements: Capstone Experience and Writing Intensive

Prerequisites: Junior standing and BIO 200 or BIO 208 or SMS 201 or permission

Course Typically Offered: Spring

Credits: 4

BIO 452 - Plant Physiology

Physiological processes in plants, with emphasis on water relations, mineral nutrition and physiological ecology. Lec 3.

General Education Requirements:

Prerequisites: BIO 200 or PSE 100 or SFR 100, and either CHY 121 or BMB 207

Course Typically Offered: Fall

Credits: 3

BIO 453 - Plant Physiology Laboratory

Research design and laboratory study of the physiological function of plants. Lab 2

General Education Requirements:

Prerequisites: BIO 452 or concurrently or permission of the instructor.

Course Typically Offered: Fall

Credits: 1

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: Population and the Environment

Prerequisites: BIO 319 or WLE 200 or SMS 300 or SMS 352 or SFR 407 or permission of instructor.

Course Typically Offered: Spring, even years

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: Capstone Experience and Writing Intensive

Prerequisites: BIO 319 or SMS 300 or WLE 200 or permission.

Course Typically Offered: Fall, Even Years

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: Lab in the Basic or Applied Sciences

Prerequisites: BIO 200 or SFR 100 or PSE 100.

Course Typically Offered: Fall

Credits: 4

BIO 468 - Lake Ecology

The ecology of inland waters, with emphasis on the physical, chemical and biological characteristic of lakes. Lec 3.

General Education Requirements:

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 taken for degree credit.

General Education Requirements:

Prerequisites: A grade of C- or better in BIO 200 or in SMS 201, CHY 121 or BMB 207, and 3 credits of Physics; or enrollment in the Neuroscience minor and BIO 307

Course Typically Offered: Fall and Spring and Summer

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.

General Education Requirements:

Prerequisites: BIO 319 or BIO 468 or SFR 407 or SMS 300 or SMS 352 or WLE 200.

Course Typically Offered: Spring, Even Years

Credits: 4

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. Note: Because of overlap, BIO 480 and BIO 580 cannot both be taken for degree credit. Lec 3.

General Education Requirements: Capstone Experience and Writing Intensive Requirements if taken together with BIO 483.

Prerequisites: BIO 200 or BIO 208 or SMS 201 or BMB 155/HON 155, and either CHY 251 or BMB 221; Junior standing is highly recommended

Course Typically Offered: Spring

Credits: 3

BIO 483 - Cell Biology Laboratory

A laboratory course consisting of exercises employing techniques commonly utilized in cell biological research, with an emphasis on mammalian cell culture, cellular energetics, and skills essential for a career involving cell biology lab work. Note: Because of overlap, BIO 483 and BIO 583 cannot both be taken for degree credit.

General Education Requirements: Satisfies the General Education Capstone Experience and Writing Intensive Requirements if taken together with BIO 480.

Prerequisites: BIO 480 or concurrently.

Course Typically Offered: Spring

Credits: 2

Biomedical Engineering

BEN 111 - Introduction to Biomedical Engineering I

An introduction to the profession of biomedical engineering through a series of speakers, activities, projects, and presentations. The development of teamwork, professional practices, and presentation skills are emphasized.

Prerequisites: First year students only.

Course Typically Offered: Fall

Credits: 2

BEN 112 - Introduction to Biomedical Engineering II

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 tools is explored through group activities and hands-on design projects relevant to the biomedical engineering profession.

General Education Requirements:

Prerequisites: MAT 126 or permission.

Course Typically Offered: Spring

Credits: 2

BEN 201 - Fundamentals of Biomedical Engineering

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 biomedical engineering practice; introduction to the biomedical and biotechnology industries.

General Education Requirements:

Prerequisites: CHY 121, CHY 122, MAT 126 and MAT 127 or permission

Course Typically Offered: Fall

Credits: 4

BEN 202 - Transport Phenomena in Biomedical Systems

Introduction into transport phenomena related to biological and engineered 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 and engineered systems such as blood flow and transport across cell membranes, filtration, and separation.

General Education Requirements:

Prerequisites: A C- or better in BEN 201 and MAT 228 or permission.

Course Typically Offered: Spring

Credits: 4

BEN 361 - Biomedical Engineering Laboratory I

Principles of biomedical engineering are applied in the laboratory setting, using analogs of biomedical systems and appropriate instrumentation. An emphasis is placed on formal written and oral reports.

General Education Requirements: Writing Intensive

Prerequisites: A grade of C- or better in BEN 202, PHY 122, MAT 258 or permission.

Course Typically Offered: Fall, Summer

Credits: 3

BEN 363 - Biomedical Engineering Laboratory II

Application of engineering design principles to the development of biomedical products and instrumentation. An emphasis is placed on formal written and oral reports.

General Education Requirements: Writing Intensive

Prerequisites: Grade of C- or better in BEN 361, BEN 401, BEN 403, ECE 209 and STS 332 or permission.

Course Typically Offered: Spring and Summer

Credits: 3

BEN 396 - Research Experience in Biomedical Engineering

An approved research experience under the direct supervision of at least one faculty member. Specific activities can include a combination of literature study, applied theory and modeling, and hands on laboratory practice.

General Education Requirements:

Prerequisites: Permission

Course Typically Offered: Fall, Spring, Summer

Credits: 3

BEN 401 - Dynamic Biomedical Systems

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.

General Education Requirements:

Prerequisites: Grade of C- in BEN 201 and BEN 202, PHY 122, MAT 258, BIO 208 or permission.

Course Typically Offered: Fall and Summer

Credits: 3

BEN 402 - Biomaterials and the Cellular Interface

The course is focused on the application of biomedical engineering 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.

General Education Requirements:

Prerequisites: A C- or better in BEN 201 and BEN 202 and BMB 280, CHY 251 or permission.

Course Typically Offered: Spring

Credits: 3

BEN 403 - Instrumentation in Biomedical Engineering

A range of widely used clinical, diagnostic and therapeutic instrumentation is presented. Students are made aware of emerging tools and methods. Theory, application, design, hardware and software components and limitations of a number of laboratory and clinical instruments are presented. Students develop the skills necessary to design and automate their own instruments and methods using relevant software. Key principles are further elucidated and, where appropriate, demonstrated during a weekly recitation.

General Education Requirements:

Prerequisites: A grade of C- or better in BEN 201 and BEN 202, STS 332, ECE 209 or permission

Course Typically Offered: Fall and Summer

Credits: 3

BEN 451 - Biological and Medical Image Analysis I

Introduction to computational analysis of imaging data from biological and medical contexts. Math and physic-based algorithmic development and programming centered on scripting languages such as ImageJ/Fiji and R. Development of a term project.

General Education Requirements:

Prerequisites: MAT 228 and 258 (or MAT 262 and MAT 259) or permission of the instructor

Course Typically Offered: Fall

Credits: 3

BEN 452 - Biological and Medical Image Analysis II

Advanced computational analysis of imaging data from biological and medical contexts. Math and physics-based algorithmic development and programming centered on scripting languages such as ImageJ/Fiji and R. Development of a term project. In consultation with the instructor, each student will work on the computational analysis/modeling of one or more biomedical image datasets.

General Education Requirements:

Prerequisites: BEN 451 or permission of instructor

Course Typically Offered: Spring

Credits: 3

BEN 477 - Elements of Biomedical Engineering Design

Introduction to the economic and regulatory aspects of biomedical engineering product design. Covers elements of needs research and marketing. Protection of intellectual property is also addressed, along with medical device testing, regulation, and finance.

General Education Requirements: Together with 'BEN 493' , '& BEN 479' , 'this course satisfies the General Education Ethics requirement.

Prerequisites: Junior or Senior standing in BIE or permission. Open to non-BIE Engineering majors taking BIE minor with senior standing

Course Typically Offered: Fall

Credits: 3

BEN 478 - Biomedical Engineering Design I

Application of engineering principles and design strategies to the solution of problems relevant to the biomedical community including: products, processes, devices, or techniques. Emphasis on oral and written communications and working in small design groups.

General Education Requirements: BEN 478 and BEN 479 must both be taken to satisfy the Capstone Experience.

Prerequisites: Grade of C- or better in BEN 363 and BEN 403, or permission.

Corequisites: BEN 477

Course Typically Offered: Fall

Credits: 2

BEN 479 - Biomedical Engineering Design II

Application of professional practices and engineering principles to the solution of complex, open-ended, design challenges. This can involve the design, prototyping, and optimization of products, processes, devices, or techniques relevant to the biomedical community. Emphasis on oral and written communications and working in small design groups.

General Education Requirements: BEN 478 and BEN 479 must both be taken to satisfy the Capstone. Together with BEN 493, & BEN 477, this course satisfies the Ethics requirement.

Prerequisites: BEN 477 and BEN 478

Course Typically Offered: Spring.

Credits: 3

BEN 492 - Special Biomedical Engineering Design Projects

A supervised design experience where students select and design components and systems for specified engineering projects. 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.

General Education Requirements:

Prerequisites: Permission

Course Typically Offered: Fall & Spring & Summer

Credits: 1-3

BEN 493 - Biomedical Engineering Seminar

Discussion of recent developments in the Biomedical Engineering field, in addition to related fields.

Course note: May be repeated for credit up to two completions with a total of 1 credit.

General Education Requirements: Together with 'BEN 477' , '& BEN 479' , 'this course satisfies the General Education Ethics requirement.

Prerequisites: Senior standing in Biomedical Engineering curriculum, or permission

Course Typically Offered: Fall & Spring

Credits: 0-1

BEN 494 - Bioengineering Practice

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.)

General Education Requirements:

Course Typically Offered: Fall, Spring, Summer

Credits: Ar

BEN 497 - Independent Study

Individual, independent study of a specialized or standard course offered out of sequence, under supervision of an instructor. Specific course requirements vary.

Course note: May be repeated for credit with 3 total completions and 9 credits maximum.

General Education Requirements:

Course Typically Offered: Fall, Spring, Summer

Credits: 3-4

BEN 498 - Special Topics in Biomedical Engineering

Course work in selected subjects relevant to the field of biomedical engineering, or related areas of science and technology not covered in other regular course offerings.

This course can be repeated for credit as long as it is a different topic and two sections on different topics can be taken concurrently.

General Education Requirements:

Prerequisites: Permission required.

Course Typically Offered: Fall, Spring, Summer

Credits: 1-3

BEN 499 - Undergraduate Thesis

Original investigation of a biomedical engineering problem. A committee of at least three faculty members will supervise the thesis and its defense. The topic must be chosen and approved by the committee prior to the senior year. (Offered by arrangement).

Course note: Course may be repeated for credit with a total of 6 completions and a maximum of 6 credits.

General Education Requirements:

Course Typically Offered: Fall, Spring, Summer

Credits: 1-6

Business Administration

BUA 396 - Business Administration Internship

The Business Administration Internship course is the non-major specific internship class offered within the Maine Business School. Students participating in an internship will apply what they have learned in the Maine Business School to an organizational setting and advance their own professional development.

Course note: May be repeated for credit with 2 completions and a total of 6 credits.

General Education Requirements:

Prerequisites: Sophomore Standing

Course Typically Offered: Fall, Spring, Summer

Credits: 0-6

Business Information Systems

BIS 105 - Excel Fundamentals for Business Analytics

The course introduces students to work with data sets in excel worksheets, formulas, templates, charts, and common excel functions needed in any business context. Student cannot earn credit for both COS 213 and BIS 105.

General Education Requirements:

Course Typically Offered: Fall and Spring

Credits: 1

BIS 235 - Digital Business Transformation

Technologies and information systems represent a crucial part of any organization in today's economy, businesses require continual digital transformation to become or remain competitive. The focus of this course is to provide students with the knowledge and tools in essential technologies including databases, computer networks, cloud computing, enterprise software, e-business systems, cyber security, and emerging technologies.

General Education Requirements:

Course Typically Offered: Fall & Spring

Credits: 3

BIS 267 - Database Management and Security

Introduction to technical and managerial issues associated with databases. Topics include structured query language (SQL) and database usage in decision making. Focuses on database security to mitigate against major database security issues. Students will learn how to incorporate security models into the database life cycle and use database security for allowing or disallowing user actions on the database and the objects within it.

General Education Requirements:

Prerequisites: Sophomore Standing and a Grade of C- or higher in BIS 235.

Course Typically Offered: Fall & Spring

Credits: 3

BIS 290 - Introduction to Topics in Business Information Systems

Introduces students to aspects of the Business Information Systems discipline. Special topics may include areas relevant to any aspect of business information systems at an introductory level. This course may be repeated for credits.

Prerequisites: Business Major or Minor

Course Typically Offered: Variable

Credits: 1-3

BIS 305 - Excel Expert for Business Analytics

This course is aimed at those who have a foundation in Excel and want to reach the next level of expertise. The expert level course teaches sophisticated formulas, advanced charting, simple macros, pivot tables, and more about the back-stage area of Excel including security and protecting spreadsheets. Students are given the opportunity to take the Microsoft Office Specialist (MOS) Excel Expert certification exam at the end of the course.

If this course was taken as a topics course in BIS 490, it cannot be repeated for credit.

Prerequisites: C- or higher in BIS 105 or passed the Microsoft Office Specialist: Excel Associates Certification exam.

Course Typically Offered: Fall and Spring

Credits: 1

BIS 345 - Business Analytics

Overview of the process of business analysis. Data analytics have moved out of the academic world of statisticians to the practical world of technology. A variety of user-friendly technologies bring powerful analytical capabilities to end users. Three major areas that comprise analytics are reporting, visualization and prediction. This course uses the latest in technology to show the practice of data analytics in the real world. You will experience practical applications of analytics through guided exercises and case studies.

General Education Requirements:

Prerequisites: BIS 105, BIS 235 and STS 215 or STS 232

Course Typically Offered: Spring

Credits: 3

BIS 363 - Information Security Management

Introduces the design, management and information security of information systems in networked environments. Topics include telecommunications, network architecture, and a focus on information security governance, risk management, information security program development and management, and information security incident management.

General Education Requirements:

Prerequisites: A grade of C- or better BIS 235

Course Typically Offered: Spring

Credits: 3

BIS 364 - Business Process Configuration

Discusses advanced topics in business processing including concepts related to Enterprise System (ERP) principles, concepts, and techniques. Grounded in an SAP (Systems, Applications & Products in Data Processing) architecture, this course counts toward the SAP Certificate of Completion. Topics in the class include understanding system requirements and how business processes and business rules translate into system configuration. Using SAP, students will learn the fundamentals of configuring an enterprise system from requirement gathering, through design, configuration, and testing.

General Education Requirements:

Prerequisites: BIS 235

Course Typically Offered: Fall

Credits: 3

BIS 396 - Field Experience/Internship in Business Information Systems

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.)

Course note: May be repeated for credit up to 9 completions with a total of 54 credits.

General Education Requirements:

Prerequisites: Business Majors with 2.50 GPA or better; Junior Standing

Course Typically Offered: Fall, Spring, Summer

Credits: 1-6

BIS 468 - Information Systems Strategy and Security Management

Digital technologies have emerged as critical organizational resources to compete in dynamic markets. When embracing digital business transformation, leaders must rethink how to operate and secure their organization, and how best to compete in the marketplace. Notably, business and IT leaders need to manage information systems by integrating major software systems like customer relationship management, supply chain management, big data, analytics, artificial intelligence, cloud technologies, and the 'Internet of all things', across functional areas of the organization, as well as various digital platform ecosystems. The pervasiveness and openness of these systems poses security challenges that must also be managed. This course provides students with fundamentals about the management and security of the IT function in this context, strategies to help improve the value of IT for the organization, and the secure and ethical use of information and data from information systems. The course represents the culmination and integration of prior knowledge gained in the business and BIS curriculum.

General Education Requirements: Writing Intensive

Prerequisites: Junior standing, a grade of C- or better in BIS 267 and BIS 364 or permission.

Course Typically Offered: Spring

Credits: 3

BIS 490 - Special Topics in Business Information Systems

Study of various aspects of functional areas of business information systems. Topics vary depending on faculty and student interests. May be repeated for credit with 3 completions and a total of 9 credits if the topics differ.

General Education Requirements:

Prerequisites: BIS 235 and junior standing

Course Typically Offered: Variable

Credits: 1-3

Canadian Studies

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: Western Cultural Tradition and Cultural Diversity and International Perspectives

Course Typically Offered: Fall and Summer

Credits: 3

CAN 190 - Topics in Canadian Studies

A study of selected Canadian Studies topics. May be taken for a total of 9 completions and 27 total credits if topics differ.

Prerequisites: None

Corequisites: None

Course Typically Offered: Alternating

Credits: 3

CAN 390 - Advanced Topics in Canadian Studies

An advanced study of selected Canadian Studies topics.

Course Note: May be repeated for credit for a total of 9 completions and 27 total credits if topics differ.

Prerequisites: None

Corequisites: None

Course Typically Offered: Alternating

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.

Course note: May be repeated for credit with 9 total completions and 27 total credits if topics differ

General Education Requirements:

Course Typically Offered: Spring

Credits: 3

CAN 499 - Internship-Canadian Studies

Provides students from Canadian Studies, International Affairs, French - or any major - the opportunity to integrate academic and professional experience through an internship with an external employer, that relates to the student's course of studies and Northeastern Americas.

General Education Requirements:

Prerequisites: Sophomore, Junior, or Senior standing with a 2.50 GPA or higher

Course Typically Offered: Fall, Spring, Summer

Credits: 1-3

Chemical Engineering

CHE 111 - Introduction to Chemical Engineering I

An introduction to the professions of chemical engineering through a series of speakers, tours, presentations and projects. The development of teaming and oral presentation skills are emphasized.

Prerequisites: First-year students only.

Course Typically Offered: Fall

Credits: 1

CHE 112 - Introduction to Chemical Engineering II

Introduction to the application of computers to solving chemical engineering problems. Commercial and public domain computer software for equation solving and spread sheeting will be covered. The application of these programs to chemical engineering problem solving will be introduced through a series of analysis and design projects.

General Education Requirements:

Prerequisites: MAT 126 or permission

Course Typically Offered: Spring

Credits: 3

CHE 200 - Fundamentals of Process Engineering

Introduction to chemical engineering calculations. Application of material and energy balances to single and multi-unit processes with and without chemical reactions.

General Education Requirements:

Prerequisites: CHY 122, MAT 126 and PHY 121 or permission.

Course Typically Offered: Fall

Credits: 4

CHE 350 - Statistical Process Control and Analysis

The basics of statistics and statistical process control and systems optimization will be investigated.

General Education Requirements:

Prerequisites: MAT 127 or permission of instructor.

Course Typically Offered: Spring

Credits: 3

CHE 352 - Process Control

Process dynamics described by ordinary differential equations and by linearized approximations. Covers solution of system equations by the use of Laplace transforms, concepts of feedback control, process dynamics and closed loop system analysis. Lec 3.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: C- or better in CHE 200 or permission.

Course Typically Offered: Fall & Summer

Credits: 4

CHE 361 - Chemical Engineering Laboratory I

Applies the principles of chemical engineering unit operations and process control in the laboratory, using pilot scale equipment. An emphasis is placed on formal written and oral reports.

General Education Requirements: Writing Intensive

Prerequisites: CHE 352 and CHE 360 or permission.

Course Typically Offered: Spring, Summer

Credits: 3

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.

General Education Requirements:

Prerequisites: CHE 360 or permission.

Course Typically Offered: Spring, Summer

Credits: 4

CHE 363 - Chemical Engineering Laboratory II

Applies the principles of chemical engineering unit operations in the laboratory using pilot scale equipment.

General Education Requirements:

Prerequisites: CHE 361, CHE 362, and CHE 368

Course Typically Offered: Fall

Credits: 3

CHE 368 - Kinetics and Reactor Design

The analysis and design of chemical reactors, and the student of chemical reaction kinetics. The fundamental principles of chemical kinetics and of heat and mass transfer are applied to the design of various types of chemical reactors.

General Education Requirements:

Prerequisites: CHE 200 and CHE 386 and MAT 258 or permission

Course Typically Offered: Spring, Summer

Credits: 4

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.)

General Education Requirements:

Prerequisites: MAT 228 and a C- or better in CHE 200 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.)

General Education Requirements:

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.)

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: CHY 122 and CHY 251 or permission.

Course Typically Offered: Spring

Credits: 3

CHE 475 - Process Safety

Covers the important fundamental concepts of chemical process safety.

Prerequisites: CHE 360, CHE 362, CHE 368

Course Typically Offered: Fall

Credits: 2

CHE 477 - Elements of Chemical Engineering Design

Introduction to chemical engineering economics and process design. Considers principles of design, capital cost and operating cost estimating techniques as well as principles of engineering economics involving time value of money, taxes, depreciation, profitability metrics, alternative investment comparisons and process optimization.

General Education Requirements: Together with 'CHE 493', '& CHE 479', 'this course satisfies the General Education Ethics requirement.

Prerequisites: CHE 360 and CHE 362

Course Typically Offered: Fall

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.

General Education Requirements:

Prerequisites: CHE 360, CHE 362, CHE 368 and CHE 386 or permission.

Corequisites: CHE 477.

Course Typically Offered: Fall

Credits: 3

CHE 479 - Chemical Engineering 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.

General Education Requirements: Capstone Experience. Together with 'CHE 493' , '& CHE 477' , 'this course satisfies the General Education Ethics requirement.

Prerequisites: CHE 477 and CHE 478

Course Typically Offered: Spring

Credits: 3

CHE 493 - Chemical Engineering Seminar

Discussion of recent developments in the chemical engineering field, in addition to related fields. May be repeated for credit up to 2 completions with a total of 1 credit.

General Education Requirements: Together with 'CHE 477' , '& CHE 479' , 'this course satisfies the General Education Ethics requirement.

Prerequisites: Senior standing in Chemical Engineering, or permission.

Course Typically Offered: Fall & Spring

Credits: 0-1

CHE 494 - Chemical Engineering Practice

A cooperative work experience in a commercial operation of the chemical process industry. May be repeated for credit to a maximum of 8 credit hours. (Offered by arrangement.)
(Pass/Fail Grade Only.)

General Education Requirements:

Course Typically Offered: Fall, Spring, Summer

Credits: Ar

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.

General Education Requirements:

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 for a total of 9 completions and 27 total credits

General Education Requirements:

Prerequisites: permission.

Course Typically Offered: Fall & Summer

Credits: 1-3

Chemistry

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.

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 104 - The Chemistry of Food and Cooking

A non-mathematical approach to basic chemistry and chemical principles using food and cooking as the common theme. During the course of the semester, we will use different food and cooking topics to explore a variety of themes in chemistry. Emphasis will be placed on understanding why and how something works in a laboratory and the application to the "real world", in this case, the kitchen. The lab will complement the course by providing hands-on experience with topics covered in lecture and by emphasizing the scientific method through examination of food and cooking. Lec 3, Lab 1

Class Note: This course does not count towards the Chemistry major/minor.

General Education Requirements: Basic or Applied Lab Science

Course Typically Offered: Spring, Alternating years

Credits: 4

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.)

General Education Requirements:

Prerequisites: First-year students only.

Course Typically Offered: Fall

Credits: 1

CHY 121 - General Chemistry I

First semester of a two-semester sequence covering fundamental principles in chemical science presented in quantitative terms. Topics include matter, chemical reactions, stoichiometry, thermochemistry, quantum theory, atomic structure, electronic configurations, periodic properties of elements, bonding theories, and molecular geometries. This course and CHY 123 (taken concurrently) provide the basis for further study of chemistry. Lec 3

General Education Requirements: General Education Requirement: Together with CHY 123, this course satisfies the General Education Lab in the Basic or Applied Sciences Requirement.

Prerequisites: A grade of C or better in MAT 111, 116, 122 or 126, or no grade in any of these and a passing score on the Math Placement Exam.

Corequisites: CHY 123

Course Typically Offered: Fall, Spring, Summer

Credits: 3

CHY 122 - General Chemistry II

Second semester of a two-semester sequence covering fundamental principles in chemical science presented in quantitative terms. Topics include gases, intermolecular forces, properties of solutions and solids, kinetics, equilibrium, acid-base chemistry, aqueous ionic equilibria, thermodynamics, and electrochemistry. This course and CHY 124 (taken concurrently) provide the foundation for all further studies in chemistry.

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 - General Chemistry Laboratory I

Introduction to experimental techniques and the process of scientific inquiry in chemistry. Emphasis is placed on making connections between macroscopic experimental observations and chemistry occurring at the atomic scale. Laboratory investigations are designed to help strengthen chemical understanding of concepts such as conservation of mass, limiting reactants, heats of reaction, greenhouse gases, chemical redox reactions, chromatography, and spectroscopy. CHY 123 is taken concurrently with CHY 121.

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 - General Chemistry Laboratory II

A continuation of CHY 123. Emphasis is placed on making connections between macroscopic experimental observations and chemistry occurring at the atomic scale. Laboratory investigations are designed to help strengthen chemical understanding of concepts such as properties of gases, phases of water, freezing point depression, chemical kinetics, acids and bases, chemical equilibria, buffers, dissolved oxygen, and spectroscopy. CHY 124 is taken concurrently with CHY 122.

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.

General Education Requirements:

Prerequisites: MAT 122 (or MAT 126 or MAT 127) 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.

General Education Requirements:

Prerequisites: 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 4.

General Education Requirements:

Prerequisites: A grade of C- or better in both CHY 122 and CHY 124.

Course Typically Offered: Fall

Credits: 5

CHY 251 - Organic Chemistry I

Properties and reactivity of organic compounds with emphasis placed on functional groups, bonding, stereochemistry, reaction pathways, and curved-arrow mechanisms. The topics in this class will complement the organic chemistry covered in other courses including biology, chemical synthesis, engineering, and microbiology.

General Education Requirements:

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

Reactivity of organic compounds and applications to synthesis. Spectroscopy is discussed in relation to compound characterization and structure elucidation. The topics in this class will complement the organic chemistry covered in other courses including biology, chemical synthesis, engineering, and microbiology. Emphasis will be placed on understanding why and how a chemical reaction takes place and the application to the "real-world."

General Education Requirements:

Prerequisites: A grade of C- or better in CHY 251 and CHY 253.

Course Typically Offered: Spring, Summer

Credits: 3

CHY 253 - Organic Chemistry Laboratory I

A laboratory course designed to complement the topics covered in CHY 251 by giving hands on experience with the concepts presented in class. Emphasis will be placed on introductory laboratory techniques, data analysis, and laboratory safety.

General Education Requirements:

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 laboratory course designed to complement the topics covered in CHY 251 and CHY 252 by giving hands on experience with the concepts presented in class. Emphasis will be placed on reaction setup, data analysis (including spectroscopic methods), and laboratory safety.

General Education Requirements:

Prerequisites: A grade of C- or better in CHY 251 and CHY 253.

Corequisites: CHY 252

Course Typically Offered: Spring, Summer

Credits: 2

CHY 261 - Introduction to Inorganic Chemistry

The primary purpose of this course is to explore a significant portion of the sub-discipline of inorganic chemistry, with an emphasis on the transition elements. The arrangement of elements in the periodic table will guide understanding of trends in structure and reactivity. Applications of inorganic chemistry to medicine, materials and catalysis will be discussed.

General Education Requirements:

Prerequisites: C- or better in CHY 122.

Course Typically Offered: Variable

Credits: 3

CHY 298 - Introduction to Chemistry Research and the Chemistry Profession

Topics covered will include introduction to chemical literature databases; data analysis tools; careers in chemistry; laboratory safety; and information about choosing a research project. For students in BS degree programs that require a semester of research (CHY 498) this course is expected to result in the initiation of a research project. Students in the BA degree program have the option to focus more on exploring career opportunities for chemists.

General Education Requirements:

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.

Course note: May be repeated for credit for a total of 9 completions and 27 total credits.

General Education Requirements: Writing Intensive

Prerequisites: Chemistry major; A grade of C- or better in CHY 122 and CHY 298.

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.)

General Education Requirements:

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.

General Education Requirements:

Prerequisites: a grade of C- or better in CHY 252 and MAT 127 or permission

Course Typically Offered: Variable

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.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: A grade of C- or better in CHY 242 and CHY 471.

Course Typically Offered: Variable

Credits: 3

CHY 461 - Advanced Inorganic Chemistry I

Advanced theoretical and descriptive inorganic chemistry emphasizing covalent bonding and molecular orbital theory, transition metal complexes and coordination chemistry, symmetry and group theory, and applications to bioinorganic and materials chemistry.

General Education Requirements:

Prerequisites: A grade of C- or better in CHY 261 or permission.

Course Typically Offered: Alternate

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.

General Education Requirements:

Prerequisites: C- or better in CHY 252 and CHY 261.

Course Typically Offered: Spring

Credits: 3

CHY 471 - Physical Chemistry I

Applications of classical thermodynamics to the study of chemical systems. Lec 3.

General Education Requirements:

Prerequisites: C- or better in CHY 122; MAT 127 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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: CHY 122 or CHY 131 and PHY 122 and MAT 127

Course Typically Offered: Variable

Credits: 3

CHY 483 - Introductory Wood Chemistry

Emphasis on the chemical and physical properties of cellulose, hemicelluloses, lignin and extractives. Lec 3.

General Education Requirements:

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.

Course note: May be repeated for credit for a total of 9 completions and 27 total credits if topics differ.

General Education Requirements:

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. As a writing intensive course, an emphasis is placed on developing skill in writing formal laboratory reports. Lab 6.

General Education Requirements: Writing Intensive

Prerequisites: A grade of C or better in CHY 242, CHY 261, CHY 254, and CHY 471 or concurrently.

Course Typically Offered: Spring

Credits: 3

CHY 492 - Advanced Integrated Laboratory II

This course is the second semester of an advanced laboratory course that integrates inorganic, instrumental, and physical chemistry concepts. The purpose of the course is to build on and extend the laboratory and technical writing skills acquired in CHY 491, with an emphasis on more independent lab work. Students work collaboratively in teams and with faculty instructors to design and carry out an experimental plan that may be developed as a theme for CHY 491. Results will be presented using a combination of oral and written formats.

General Education Requirements: Together with CHY 498', 'this course satisfies the General Education Capstone Experience Requirement for the BS degree. Together with an upper level chemistry elective CHY 4XX' , 'this course satisfies the General Education Capstone Experience Requirement for the BA degree.

Prerequisites: A grade of C or better in CHY 491. Chemistry majors only or permission.

Course Typically Offered: Fall

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 in each of three different semesters to fulfill this requirement.

May be repeated for credit for a total of 3 completions and 3 credits.

General Education Requirements: Together with CHY 499' , 'this course satisfies the General Education Capstone Experience requirement for the BS degree (ACS certified). Together with CHY 492' , 'this course satisfies the General Education Capstone experience Requirement for the BS degree.

Prerequisites: CHY 298

Course Typically Offered: Fall, Spring, Summer

Credits: 1-3

CHY 499 - Undergraduate Thesis

Written report of an original investigation carried out in the library and laboratory.

May be repeated for credit for a total of 9 completions and 27 total credits.

General Education Requirements: Together with CHY 498' , 'this course satisfies the General Education Capstone Experience Requirement for the BS degree (ACS certified).

Prerequisites: CHY 498 and Senior Standing.

Course Typically Offered: Fall, Spring, Summer

Credits: 3

Child Development and Family Relations

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: Social Contexts and Institutions

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: Social Contexts and Institutions

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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: CHF 201.

Course Typically Offered: Variable

Credits: 3

CHF 316 - Literacy and the Youngest Learner

Review of specific subject areas in the field. This subject area focuses on literacy development from birth to age 5, with particular emphasis on child care and school settings as sites for literacy-learning. Previously offered as CHF 404 Literacy and the Youngest Learner.

General Education Requirements:

Prerequisites: CHF 203 or permission

Course Typically Offered: Spring

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.

General Education Requirements:

Prerequisites: CHF 201, CHF 203, EHD 204

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: Writing Intensive

Prerequisites: CHF 201, CHF 203, EHD 204

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.

General Education Requirements:

Prerequisites: CHF 201, CHF 203, EHD 204

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.

General Education Requirements:

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: Ethics and Social Contexts and Institutions

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.

General Education Requirements:

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.

General Education Requirements:

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 if topics differ with 9 completions and a total of 27 credits.

General Education Requirements:

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.)

General Education Requirements:

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. May be repeated for credit.

General Education Requirements:

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.

General Education Requirements:

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. May be repeated for credit.
(Pass/Fail Grade Only.)

General Education Requirements:

Prerequisites: Child Development and Family Relations major with senior standing and Teacher Candidacy.

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. May be repeated for credit for a total of 2 completions and 6 total credits.

General Education Requirements:

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. May be repeated for credit with a total of 9 completions and 27 total credits.

General Education Requirements: 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. May be repeated for credit with a total of 9 completions and 27 total credits.

General Education Requirements: Capstone Experience

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.

General Education Requirements:

Prerequisites: CHF 200, CHF 201.

Course Typically Offered: Variable

Credits: 3

CHF 433 - Adolescence

Growth and development during the adolescent years. Conceptual models and recent research are discussed.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

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: Ethics

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.

General Education Requirements:

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 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 CHF major and not more than 12 credits may be used toward the graduation requirements. (Pass/Fail Grade Only.)

General Education Requirements:

Prerequisites: Permission of instructor.

Course Typically Offered: Fall, Spring, Summer

Credits: 1-6

Chinese

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: Cultural Diversity and International Perspectives

Course Typically Offered: Spring

Credits: 5

Civil and Environmental Engineering

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.)

General Education Requirements:

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.)

General Education Requirements:

Course Typically Offered: Spring

Credits: 3

CIE 110 - Materials

The structure, properties, and testing of engineering materials and their use in constructed facilities. Analytical tools used to quantify material properties are covered along with appropriate statistical tools for quantifying uncertainty. Basic microstructure-property relationships are established, as are the fundamental mechanisms for strength and toughness. The production and properties of concrete, steel, wood and polymer composites are covered along with relative advantages and disadvantages of each as a construction material. The bases for material selection are established using both technical and non-technical consideration. (0.0 ED/3.0 ES)

General Education Requirements:

Prerequisites: MAT 122, MAT 126 or concurrently or MAT 116

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.)

General Education Requirements:

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

General Education Requirements:

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: Population and Environment and Ethics

Course Typically Offered: Variable

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.

General Education Requirements:

Prerequisites: MAT 126 and 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.

General Education Requirements:

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

General Education Requirements:

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.

General Education Requirements:

Prerequisites: Grade of C or better in MEE 150

Corequisites: Prerequisite or Corequisite: MAT 258 or MAT 259. MAT 258 or MAT 259 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

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

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. (Pass/Fail Grade Only.)

General Education Requirements:

Prerequisites: Sophomore standing.

Course Typically Offered: Summer

Credits: 1-3

CIE 411 - SL: 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.

General Education Requirements: Capstone

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. Introduction to ethics theory, general concepts, and principles pertaining to engineering ethics and handling ethical situations in practice. Topics include: engineering ethics with case studies, engineering economy, consideration of risk and uncertainty, and evaluation of ambiguous and intangible factors in engineering design. This is a writing intensive course.

General Education Requirements: Ethics and Writing Intensive

Prerequisites: Senior standing

Corequisites: CIE 413

Course Typically Offered: Fall

Credits: 3

CIE 413 - SL: Project Management

Students study the role of civil engineers in the implementation process of engineering projects from project conceptualization through design, construction, commissioning, start-up and operations. Students practice using project management themes by creating a proposal for providing a schematic design feasibility study for a community partner. Topics include: project life-cycle, project management tools, quality and risk management, required deliverables of design, scheduling of resources and personnel, and work breakdown structure.

General Education Requirements:

Prerequisites: ENG 320 and Senior standing and 6 credits of CIE engineering electives or Permission. The 6 credits of CIE engineering electives may be taken concurrently.

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.

General Education Requirements:

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.)

General Education Requirements:

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.

General Education Requirements:

Prerequisites: Grade of C or better in CIE 225.

Course Typically Offered: Fall

Credits: 3

CIE 428 - Pavement Analysis and Design

Fundamentals of pavement analysis, design and maintenance will be presented in this course. Specific course topics include pavement types; stress, strain, and deflection analysis of rigid and flexible pavements; traffic loading and volume calculation; drainage design, overlay design; materials (hot mix asphalt (HMA) and portland cement concrete (PCC)) characterization; rigid and flexible pavement design methods (AASHTO and others); pavement performance and management systems; and life-cycle analysis. If this course was taken under as a topics course in CIE 498 it cannot be repeated for credit.

General Education Requirements:

Prerequisites: CIE 110, MEE 251 and a grade of C or better in CIE 225

Course Typically Offered: Spring

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.

General Education Requirements:

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

General Education Requirements:

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.

General Education Requirements:

Prerequisites: Grade of C or better in CIE 331.

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)

General Education Requirements:

Prerequisites: Grade of C or better in CIE 331.

Course Typically Offered: Variable

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.

General Education Requirements:

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

General Education Requirements:

Prerequisites: C or better in CIE 340.

Course Typically Offered: Spring

Credits: 4

CIE 443 - Structural Design II

Lateral loading and lateral load path for steel and concrete structures. Design of steel tension members, steel connections, concrete beam-columns, and advanced flexural members (4.0 ED/0.0 ES) Lec 3, Lab 3

General Education Requirements:

Prerequisites: C or better in CIE 442.

Course Typically Offered: Fall

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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

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 for a total of 9 completions and 27 credits as long as topics differ.

General Education Requirements:

Prerequisites: Permission.

Course Typically Offered: Fall, Spring, Summer

Credits: 1-3

Construction Engineering Technology

CET 100 - Introduction to Construction Engineering Technology

An introductory study of the construction process and civil engineering technology. Topics include CET program, project life cycle, estimating, scheduling, design, contracting and ethics and construction overview. Field trips. LAB 3. Students who take CET 100 after CIE 100 will only receive credit and grade for CET 100.

General Education Requirements:

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. Students who take CET 101 after SVT 102 will only receive credit and grade for CET 101.

General Education Requirements:

Prerequisites: SET and College of Engineering Students or Permission.

Corequisites: MAT 116 or MAT 126 or equivalent

Course Typically Offered: Fall and Spring

Credits: 3

CET 202 - Construction Layout

Study of techniques and tools used to layout construction projects. Includes project control, site staking, road staking, building layout, volume calculations, and as-builts. Labs will utilize auto levels, laser levels, total stations, and GNSS rovers.

General Education Requirements:

Prerequisites: CET 101, and MAT 116 or MAT 126

Course Typically Offered: Fall

Credits: 3

CET 221 - Construction Methods

A study in construction operations. Topics include: earthwork equipment and operations; excavations and foundations; and reinforced concrete, masonry, and structural steel construction. Course includes a lab covering digital material quantity takeoff and significant group project components.

General Education Requirements:

Prerequisites: CET 228 (may be taken concurrently)

Course Typically Offered: Spring

Credits: 4

CET 224 - Construction Safety

This course covers employee safety from a construction management perspective, including excavation, trenching, fall protection, scaffolding, training, responsibility for safety, accident investigation, and pertinent regulations (OSHA and State Department of Labor). It will also examine safety aspects of worker's compensation, liability, employee behavior, and time management.

General Education Requirements:

Course Typically Offered: Fall and Spring

Credits: 3

CET 228 - Introduction to Construction Estimating and Planning

This course covers construction plan reading, including organization, standard views and drawing conventions. Methods and practices of material quantity takeoffs and development of work breakdown structures will be explored and practiced.

General Education Requirements:

Course Typically Offered: Fall and Spring

Credits: 3

CET 325 - Construction Estimating

This course covers estimating construction quantities and prices for earthwork and building construction. This project-led, group-work based class will culminate in bid portfolios and bid openings for both an earthwork and building construction project.

General Education Requirements:

Prerequisites: CET 221 & CET 228

Course Typically Offered: Fall

Credits: 3

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. Students who take CET 326 after CIE 365 will only receive credit and grade for CET 326

General Education Requirements:

Prerequisites: CIE 110 and CIE 111. 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. Students who take CET 327 after CIE 366 will only receive credit and grade for CET 327.

General Education Requirements:

Prerequisites: CIE 110 and CIE 111. Prerequisite or Corequisite: CET 326.

Course Typically Offered: Fall

Credits: 1

CET 332 - Civil Infrastructure

This course covers construction, management, and analysis techniques related to civil infrastructure, such as transportation, drainage, water, wastewater, erosion, and sediment control.

General Education Requirements:

Prerequisites: Junior standing, CET major or minor, or permission

Course Typically Offered: Spring

Credits: 3

CET 356 - Construction Project Administration

This course covers contractual execution practices, including formal correspondence, specifications, general conditions, change orders, negotiations, submittals, warranty, safety and management plans, and contemporary topics in construction administration.

General Education Requirements: Writing Intensive

Prerequisites: Junior Standing or Permission.

Course Typically Offered: Spring

Credits: 3

CET 360 - Preconstruction Services

This course covers construction services between estimating and the start of construction. Topics will include bid preparation, bonding, subcontractor procurement and approvals, preconstruction planning, preconstruction documents, and executing construction contracts. This course culminates in capstone requirements for the fall capstone experience course, CET 458. There is a lab associated with this course which includes significant group project components.

General Education Requirements:

Prerequisites: CET221, CET325, and CET Major

Course Typically Offered: Spring

Credits: 4

CET 394 - Construction Engineering Technology Practice

The academic preparation in the spring semester will consist of project management and leadership development. This aspect will consist of two credit hours. The summer aspect will be an additional one credit hour for students to experience the actual professional construction administration environment. The experience will give students practical application of project management as it relates to workforce and professional peer interaction.

General Education Requirements:

Prerequisites: Junior or senior standing in Construction Engineering Technology or permission.

Course Typically Offered: Spring and Summer

Credits: 2

CET 395 - Construction Engineering Technology Practice Lab

This course is cooperative work experience at full-time employment for at least a continuous 10 week period.

Prerequisites: CET 394

Course Typically Offered: Summer

Credits: 1

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.

General Education Requirements: Population & Environment

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.

General Education Requirements:

Prerequisites: PHY 107 or PHY 121 and MAT 117 or MAT 127

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.

General Education Requirements:

Prerequisites: CET 228 and CET 413

Course Typically Offered: Fall

Credits: 4

CET 425 - Virtual Design and Construction

This course is an introduction to virtual design and construction (VDC) management processes and technology, which are modern approaches and tools for building project delivery and three-dimensional visualization. Building Information Modeling (BIM) applications and associated software are explored.

General Education Requirements:

Prerequisites: SVT 121 (or equivalent), CET 356, or instructor permission.

Course Typically Offered: Spring

Credits: 3

CET 426 - Heavy Construction QA

Quality Assurance is an integral part of any construction project and is a partnership between the Contractor and the Owner. Controlling the quality of work and materials, testing the materials with qualified personnel and laboratories, and resolving disputes between the Contractor and Owner as well as documentation of these activities are a significant portion of project work. This course will cover Quality Assurance, hot mix asphalt pavement, specialty topics in concrete, and contentious communication and ethics in construction.

General Education Requirements:

Prerequisites: Junior Standing

Course Typically Offered: Spring

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.

General Education Requirements:

Prerequisites: Senior standing in Construction Engineering Technology or permission.

Course Typically Offered: Spring

Credits: 3

CET 458 - SL: Management of Construction

This is the capstone course for the Construction Engineering Technology (CET) program, providing the opportunity for students to apply and practice many aspects learned in previous courses, including development and professionally executed construction of community service projects. In addition, contemporary construction practices are discussed.

Lecture 2 Lab 2

General Education Requirements: Capstone

Prerequisites: CET 202, CET 224, CET 360 and CTE Major or permission

Course Typically Offered: Fall

Credits: 3

CET 462 - Construction Planning and Scheduling

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.

Prerequisites: CET 360 or CET minor

Course Typically Offered: Fall

Credits: 3

CET 480 - Student Construction Competition Experience

Student Construction Competition Experience includes preparation for and completion of ASC Student Construction Competitions. Students will travel regionally or internationally to ASC Competitions, competing in projects consisting of complex engineering and construction problems. Students will work in teams, sometimes consisting of international team members, to complete these problems and compete.

Prerequisites: By Permission and Junior Standing

Course Typically Offered: Fall and Spring

Credits: 0-3

CET 498 - Selected Topics in Construction Engineering Technology

Topics in Engineering Technology not regularly covered in other courses. Content varies to suit individual needs. May be repeated for credit if topics differ.

General Education Requirements:

Prerequisites: Junior or Senior Standing; permission of instructor.

Course Typically Offered: Fall & Spring

Credits: Ar

Classics

CLA 101 - Greek Literature in English Translation

A survey of Greek literature. No knowledge of Greek is necessary.

General Education Requirements: Cultural Diversity and International Perspectives', 'Western Cultural Tradition and Writing Intensive

Course Typically Offered: Fall

Credits: 3

CLA 102 - Latin Literature in English Translation

A survey of Latin literature. No knowledge of Latin is necessary.

General Education Requirements: Cultural Diversity and International Perspectives', 'Western Cultural Tradition and Writing Intensive

Course Typically Offered: Spring

Credits: 3

CLA 202 - Mythology of the Ancient Near East, North Africa 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.

General Education Requirements:

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: Cultural Diversity and International Perspectives', 'and Western Cultural Tradition

Prerequisites: Sophomore Standing

Course Typically Offered: Fall Even Years

Credits: 3

Communication Sciences and Disorders

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.

General Education Requirements:

Prerequisites: First Year standing in Communication Sciences and Disorders.

Course Typically Offered: Fall

Credits: 1

CSD 130 - Introduction to Communication Sciences and Disorders

A survey of disorders of speech, language, hearing and swallowing with particular attention to the lived experiences of people with communication impairment as representative of human biological/neurological, linguistic and cultural diversity. Emphasis on exploring the nature of communication impairments and differences across communities (e.g., individuals with autism, Deaf or hard of hearing) and the lifespan.

General Education Requirements: Cultural Diversity and International Perspectives

Course Typically Offered: Fall & Spring

Credits: 3

CSD 201 - 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.

General Education Requirements:

Prerequisites: CSD 130

Course Typically Offered: Fall

Credits: 3

CSD 280 - 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.

General Education Requirements:

Prerequisites: CSD 130

Course Typically Offered: Fall

Credits: 3

CSD 283 - 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.

General Education Requirements:

Prerequisites: CSD 130

Course Typically Offered: Fall

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.

General Education Requirements:

Prerequisites: Communication Sciences and Disorders Major, CSD 201, CSD 280

Course Typically Offered: Spring

Credits: 3

CSD 382 - Phonological Development and Phonetics

Introduction to articulatory phonetics, speech sounds of American English, and typical phonological development. Emphasis on acquisition, understanding and use of phonetic transcription. Includes a weekly 50-minute transcription session.

General Education Requirements:

Prerequisites: CSD 280

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.

General Education Requirements:

Prerequisites: CSD 283

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.

General Education Requirements:

Prerequisites: PHY 105 or equivalent and CSD 283 or permission

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.

General Education Requirements:

Prerequisites: CSD 280 and Junior standing

Course Typically Offered: Spring

Credits: 3

CSD 490 - Senior Capstone: The Research Process

Explores the research process in communication sciences and disorders emphasizing principles of research, scientific and professional writing, and the foundations of professionalism and ethical decision making.

General Education Requirements: Writing Intensive and Capstone

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 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 if topics differ for a total of 9 completions and 27 total credits.

General Education Requirements:

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 for a total of 9 completions and 27 total credits.

General Education Requirements:

Prerequisites: Permission.

Course Typically Offered: Variable

Credits: 1-3

Communication & Journalism

CMJ 100 - Introduction to Media Studies

Introduces the structure and operation of mass media and the social, political and economic implications of their activities.

General Education Requirements: Social Contexts and Institutions

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: Social Contexts and Institutions

Course Typically Offered: Fall & Spring

Credits: 3

CMJ 103 - Public Speaking

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: Social Contexts and Institutions

Course Typically Offered: Variable

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: Artistic and Creative Expression

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: Population and Environment and the Social Context and Institutions

Course Typically Offered: Fall

Credits: 3

CMJ 111 - Introduction to Journalism

Introduces the profession and practice of journalism professional: responsibility and commitment to truthful, accurate, and fact-based reporting that serves the public interest. Students will be introduced to a general history of journalism in America while learning basic news values, journalistic ethics, reporting fundamentals, story types, and journalistic style.

General Education Requirements: Social Context and Institutions

Course Typically Offered: Fall

Credits: 3

CMJ 136 - 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 C- or better in CMJ 136 to continue taking professional courses in the Journalism Major.

General Education Requirements: Writing Intensive

Course Typically Offered: Fall, Spring, Summer

Credits: 3

CMJ 150 - Studying Communication and Journalism in College

Introduces new Communication, Media Studies and Journalism majors to the professions and opportunities in those fields, including departmental faculty and resources as well as community engagement, research, and internship opportunities. 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.

General Education Requirements:

Prerequisites: Communication, Media Studies or Journalism Majors

Course Typically Offered: Fall

Credits: 1

CMJ 201 - Rhetorical Theory

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: Western Cultural Tradition

Course Typically Offered: Variable

Credits: 3

CMJ 202 - Communication Theory

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: Social Contexts and Institutions

Course Typically Offered: Variable

Credits: 3

CMJ 203 - Media Theories and Research Methods

Introduction to media theories and research in the social and human sciences.

General Education Requirements:

Course Typically Offered: Spring

Credits: 3

CMJ 211 - Journalism and Media 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: Western Cultural Tradition and Social Contexts and Institutions

Course Typically Offered: Variable

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.

General Education Requirements:

Course Typically Offered: Not Regularly Offered

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:

Prerequisites: C- or better in CMJ 136

Course Typically Offered: Spring

Credits: 4

CMJ 245 - Film Criticism and Theory

Students will develop skills in the analysis of form and content so that they will achieve proficiency in the use of film studies vocabulary. Participants will learn to think critically about the media industry and to evaluate film as an art form, individual psychological experience, technology, social text, and commodity. (CMJ 245 and NMD 245 are identical courses.)

General Education Requirements:

Course Typically Offered: Spring

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.

General Education Requirements:

Prerequisites: C- or better in CMJ 102, CMJ 103, or CMJ 106 and Junior standing.

Course Typically Offered: Fall & Spring

Credits: 3

CMJ 261 - Photographic Reporting and Storytelling

Introduces journalistic and photographic skills needed for visual and written competency that can be applied to print and online image production and editing. Teaches both technical and professional standards of producing quality news and feature photographs in the context of photojournalism history and ethical issues.

General Education Requirements: Artistic and Creative Expression

Prerequisites: None.

Course Typically Offered: Spring

Credits: 3

CMJ 314 - International Media

Survey of media systems around the world and the role of mass media in political, social, economic and cultural development.

General Education Requirements: Social Contexts and Institutions and Cultural Diversity and International Perspectives

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.

General Education Requirements:

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 judgment and skills for preparing news for publication. Covers headline and prose writing, image editing, and basic page design.

General Education Requirements:

Prerequisites: A grade of C- or better in CMJ 136 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: Writing Intensive

Prerequisites: C- or better in CMJ 136

Course Typically Offered: Fall

Credits: 3

CMJ 345 - SL: Small Group Communication

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.

General Education Requirements:

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: Writing Intensive

Prerequisites: 3 hours of CMJ courses.

Course Typically Offered: Variable

Credits: 3

CMJ 351 - Audio and Video 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: Artistic and Creative Expression

Prerequisites: A grade of C- or higher in CMJ 136

Course Typically Offered: Fall

Credits: 4

CMJ 367 - Public Relations

The study of those activities which help to create public understanding and acceptance of an organization's policies and programs.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: 3 hours of CMJ courses.

Course Typically Offered: Variable

Credits: 3

CMJ 375 - Journalism and Media Law

Study of legal and ethical topics including libel, privacy, contempt, copyright, obscenity, censorship, and pre-trial publicity. The course explores the impact of journalism law on politics, economics and society.

General Education Requirements: Western Cultural Tradition and Social Contexts and Institutions Requirements.

Course Typically Offered: Variable

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.

General Education Requirements:

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: Social Contexts and Institutions

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, if topics differ, for a total of 2 completions and 6 total credits

General Education Requirements:

Prerequisites: C- or better in CMJ 136 or permission.

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.

General Education Requirements:

Prerequisites: C- or better in CMJ 136 and Permission of Department Chair

Course Typically Offered: Fall & Spring

Credits: 1-3

CMJ 398 - Topics in Media Studies

Topics not regularly covered in other Media Studies courses. Content varies to suit current needs. May be repeated for credit if topics differ for a total of 9 completions and 27 total credits.

General Education Requirements:

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: Cultural Diversity and International Perspectives and Writing Intensive

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: Quantitative Literacy

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.

General Education Requirements:

Prerequisites: 3 hours in CMJ courses.

Course Typically Offered: Variable

Credits: 3

CMJ 404 - Risk Communication

Course emphasizing applying and comparing/contrasting theories and concepts of risk communication, using several case studies of recent environmental, health, and science-related risk issues. Not open to first year students.

General Education Requirements:

Prerequisites: 3 credits in CMJ and Sophomore standing.

Course Typically Offered: Fall

Credits: 3

CMJ 405 - Gender in Communication

The course will examine gender and/in communication within cultural, institutional, and relational contexts. We will utilize theories and research to understand how cultural ideas about gender shape communication practices and conversely how mundane communication behaviors produce, challenge, and transform gender(ed) identities and ideas. We will also explore how gender(ed) practices and social systems intersect and interact with cultural norms involving sexuality, race, nationality, social class, age, ability, and other social identities. Through course research activities, students will be expected to critically consider the impacts of the communicative and intersectional production of gender on their/our social worlds. Not open to first year students.

General Education Requirements: Cultural Diversity and International Perspectives, Social Context & Institutions

Prerequisites: 3 hours of CMJ courses or C- or better in WGS 101

Corequisites: N/A

Course Typically Offered: Spring

Credits: 3

CMJ 407 - SL -Environmental Communication

Study and create effective communication about, for, and with the environment. Use a service learning model to create projects that connect communication theory and practice with complex social and environmental problems in communities.

General Education Requirements: Population and Environment

Prerequisites: 3 credit hours in CMJ

Course Typically Offered: Fall

Credits: 3

CMJ 420 - SL: 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: Social Contexts and Institutions

Prerequisites: Junior or Senior standing.

Course Typically Offered: Variable

Credits: 3

CMJ 425 - SL: Health Campaigns

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.

General Education Requirements:

Prerequisites: Junior or senior standing.

Course Typically Offered: Variable

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.

General Education Requirements: Artistic and Creative Expression

Prerequisites: C- or better in CMJ 136

Course Typically Offered: Not regularly offered.

Credits: 3

CMJ 435 - Feature Writing

Develops style and proficiency in writing non-fiction newspaper and magazine articles.

General Education Requirements:

Prerequisites: C- or better in CMJ 136

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.

General Education Requirements:

Prerequisites: Junior or senior standing.

Course Typically Offered: Fall

Credits: 3

CMJ 466 - SL: Narrative, Performance, and Social Change

The course offers a study of narratives and their performances as particular communication approaches to reflecting, engaging with, and transforming culture, identities, and communities. Considers forms and functions of narrative and performing narratives in variety of communication contexts.

General Education Requirements: Artistic and Creative Expression and Writing Intensive

Prerequisites: 3 credits of CMJ courses.

Course Typically Offered: Variable

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:

Prerequisites: C- or better in CMJ 237

Course Typically Offered: Spring

Credits: 4

CMJ 483 - Capstone Seminar in Media Studies

A seminar that draws upon and integrates formal components of students' undergraduate experience. Emphasis on the work of media professionals and on applications of media research and analysis in various contexts.

General Education Requirements: Writing Intensive and Capstone

Prerequisites: Junior or Senior Media Studies 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:

Prerequisites: C- or better in CMJ 136

Course Typically Offered: Not regularly offered.

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: Capstone and Writing Intensive

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: Ethics and Capstone

Prerequisites: C- or better in CMJ 136 or permission, Junior or Senior Journalism Majors

Course Typically Offered: Spring

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.

General Education Requirements:

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 for a total of 9 completions and 27 total credits.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: Permission of Department Chair.

Course Typically Offered: Fall, Spring, Summer

Credits: 1-3

Computer Science

COS 100 - Success in Computer Science

Orientation to college, particularly for those majoring in computer science. Introduction to the campus, resources available to students, and to the UMaine academic community. Introduction to the School of Computing and Information Science (SCIS), including the people, physical and computational facilities, and available resources for success. Introduction to computer science as a major, field, and a future career. Introduction to majoring in computer science, including techniques and strategies for success, both in general and in the major. Introduction to the College of Liberal Arts (CLAS), its characteristics, values, people, and academic community.

General Education Requirements:

Prerequisites: First year students with declared COS major.

Course Typically Offered: Fall

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.

General Education Requirements:

Course Typically Offered: Fall, Spring, Summer

Credits: 1

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: Quantitative Literacy

Course Typically Offered: Fall, Spring, Summer

Credits: 3

COS 121 - Coding for Everyone

This course introduces computer programming within a specific application domain, with the domain topic changing semester to semester. Possible applications might include Mobile App development, Data Science, Social Media, Geographic Data, Design, or Life Science. The development process for computer programs will be explored with the goal of creating concrete programs to solve real problems. The course will also cover fundamental computer programming concepts, such as variables, functions, loops, conditionals, input/output, and data types. No prior programming experience is expected.

General Education Requirements: Quantitative Literacy

Prerequisites: None

Course Typically Offered: Fall and Spring

Credits: 3

COS 125 - Introduction to Problem Solving Using Computer Programming

An introduction to computer science through problem solving and computer programming. Topics include variable and operators, control logic, functions, strings, loops, input/output, and recursion. Programming concepts covered by this course include modularity, abstraction, top-down design, specifications, documentation, debugging, and testing. No prior programming experience is expected. Required for majors.

General Education Requirements: Quantitative Literacy

Prerequisites: A grade of C or better in MAT 111 or higher, or no grade record in MAT 111 and a 61 or higher on the ALEKS Math Placement Exam.

Course Typically Offered: Fall and Spring

Credits: 4

COS 135 - Applied C Programming

Studies the C programming language, introduces concepts in computer hardware and operating systems to support discussion of how a computer program is represented from the machine layer to the application layer.

General Education Requirements:

Prerequisites: Grade of C- or higher in COS 140 and either COS 121 or COS 125

Course Typically Offered: Spring

Credits: 3

COS 140 - Foundations of Computer Science

A rigorous, non-programming introduction to the field of computer science. Several core areas of computer science are introduced, including digital logic, computer organization and architecture, operating systems, programming languages, and computer networks. For each, particular solutions to fundamental problems in the area are studied in depth to expose the student to what the field is actually about how computer scientists think. No programming is taught or required in the course.

General Education Requirements:

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 if topics differ for a total of 9 completions and 27 total credits.

General Education Requirements:

Prerequisites: Permission.

Course Typically Offered: Not Regularly Offered

Credits: 1-3

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.

General Education Requirements: Quantitative Literacy

Course Typically Offered: 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.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: Grade of C or higher in COS 125

Course Typically Offered: Fall and Spring

Credits: 3

COS 226 - Introduction to Data Structures and Algorithms

Introduction to the fundamental principles of data structures, including their use, specification, and implementation, as well as fundamental principles of algorithms related to data structures. Data structures covered include lists, trees, graphs, and hash tables. Also covers fundamentals of algorithm analysis and a basic introduction to NP-completeness.

General Education Requirements:

Prerequisites: C or higher in COS 225.

Course Typically Offered: Fall and Spring

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.

General Education Requirements:

Prerequisites: Grade of C- or higher in COS 135

Course Typically Offered: Spring

Credits: 3

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.

General Education Requirements:

Prerequisites: Grade C or in MAT 126

Course Typically Offered: Fall

Credits: 4

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.

General Education Requirements:

Prerequisites: Permission.

Course Typically Offered: Variable

Credits: 1-3

COS 301 - Programming Languages

Introduction to the fundamental concepts of formal languages, as well as the evolution and characteristics of major programming languages. Topics include finite-state automata, regular expressions, parsing, syntax and semantics, scope and binding, data types, and abstract data types.

General Education Requirements:

Prerequisites: Grade of C- or higher in 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-packaged assets that are a standard part of the Unity system.

General Education Requirements:**Prerequisites:** A grade of C- or better in COS 225 or NMD 211**Course Typically Offered:** Spring**Credits:** 3**COS 320 - Client-Side Web Development Languages**

This course explores development and integration of client-side development languages for web project creation. Projects integrate programming concepts within web scripting and tag based/mark-up languages to create responsive and interactive web sites. Project management and creation will include manipulating the DOM via industry standard client-side development languages, with a focus on programming aspects of front-end development languages. Course topics current HTML, CSS, scripting languages, pre-processed CSS, JSON, libraries, frameworks, resource management, and flexible design.

Prerequisites: COS125 and COS225, or NMD105 and NMD 211, or Instructor Approval**Course Typically Offered:** Alternating Years**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.

General Education Requirements:**Prerequisites:** Grade of C- or higher COS 226 and COS 235 or permission.**Course Typically Offered:** Fall**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:** Grade of C- or higher in COS 420 and senior standing**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.

General Education Requirements:**Prerequisites:** Permission**Course Typically Offered:** Fall & Spring**Credits:** 1-3**COS 412 - Advanced Game Programming with Unity**

Building on tools acquired in COS 312, this course's only prerequisite, students explore an advanced topic of their own choosing as they build their full final game. Possible topics include advanced Artificial Intelligence scripting, Navmesh, networked games, 3D character rigging and animation, use of the Oculus Rift virtual reality goggles, and much more. With weekly in class presentations and bi-weekly written reports, students document their progress and communicate their new tools to the rest of the class. The final game is presented to the public at the end of the semester Demo Day. If this course was taken under as a topics course in COS 498, it cannot be repeated for credit.

General Education Requirements:

Prerequisites: Grade of C- or higher in COS 312

Course Typically Offered: Variable

Credits: 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.

General Education Requirements:

Prerequisites: Familiarity with a programming language or permission

Course Typically Offered: Variable

Credits: 3

COS 417 - Spatial Interaction Design

The objective of this course is to provide a hands-on experience of interaction design research practice focusing on interactive prototype construction. The principles and technologies of interaction design will be learned through adding expressive interactions to objects and spaces around us (spatial interactions). Interaction Design (IxD) discovers people's needs, understands the context of use, frames product opportunities, and proposes useful, usable, and desirable (usually digital) products. Interaction designers often work with narrative to explore and refine desired behaviors and user experience.

General Education Requirements:

Prerequisites: Grade of C- or higher in COS 226 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.

General Education Requirements:

Prerequisites: Grade of C- or higher in COS 225

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.

General Education Requirements:

Prerequisites: Grade of C- or higher in COS 235 and COS 331.

Course Typically Offered: Spring

Credits: 3

COS 435 - Information Privacy Engineering

Overview of the current privacy (and security) regulations across the world and the associated privacy (and security) challenges, methodologies and algorithms for applications ranging from Cyber-Physical Systems, the Internet of Things, Android/iOS applications, and machine learning models.

General Education Requirements:

Prerequisites: Grade of C- or higher in COS 420

Course Typically Offered: Fall

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.

General Education Requirements:

Prerequisites: Grade of C- or higher in COS 331 or permission.

Course Typically Offered: Variable

Credits: 3

COS 442 - Cloud Computing

The National Institute of Standards and Technology (NIST) defines cloud computing as "a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction." This course will study the technologies underpinning the rapid expansion of this computing paradigm, the problem-solving capabilities enabled by the cloud, and provide the student with hands-on experience in utilizing cloud services for scientific research. It will focus on the virtualization of computational resources, cloud storage models, distributed computing in the cloud, and important applications areas such as big data analytics.

General Education Requirements:

Prerequisites: A grade of C- or higher in COS 331 or equivalent

Course Typically Offered: Spring

Credits: 3

COS 451 - Automata, Computability, and Languages

Fundamentals of formal languages and the mathematical theory of computation; finite-state 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.

General Education Requirements:

Prerequisites: Grade of C- or higher COS 301

Course Typically Offered: Spring

Credits: 3

COS 454 - Data Structures and Algorithms

Covers advanced data structures and the algorithms associated with them as well as advanced methods of algorithm analysis, including time and space complexity classes and NP-completeness.

General Education Requirements:

Prerequisites: Grade of C- or higher in COS 226 and 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.

General Education Requirements:

Prerequisites: COS 226 or equivalent and MAT 126 and junior standing or permission.

Course Typically Offered: Variable

Credits: 3

COS 465 - Data Visualization

Introduction to the goals, techniques, implementation, and evaluation of visual representations for large quantities of data. Students work with a team to produce a novel visualization solution for a client with application domain data and goals. COS 465 and COS 565 cannot both be taken for credit. COS 465 and COS 565 cannot both be taken for credit.

General Education Requirements:

Prerequisites: Grade of C- or higher in COS 226 or permission

Course Typically Offered: Spring

Credits: 3

COS 470 - Introduction to Artificial Intelligence

Introduces the student to the field of artificial intelligence, including fundamental areas and concepts such as heuristic search, knowledge representation, automated reasoning and planning, deep learning, intelligent agents, and multiagent systems. Experience in AI programming is provided by homework assignments and a semester project.

General Education Requirements:

Prerequisites: Grade of C- or higher in COS 226

Course Typically Offered: Every Year

Credits: 3

COS 473 - Computer Vision

Computer Vision is an accessible sub-field of computer science that is rising in importance and accelerating on the strengths of machine learning methods that have become the 21st century model for artificial intelligence. In this course, we will explore the uses of tools and techniques to understand our world through computing using images as our data. The first half of the course will introduce machine learning and convolutional neural networks for object recognition and classification, photogrammetry and reconstruction, and multimodal and hyperspectral imaging. As the course progresses, we will delve into the topics of image acquisition, mathematical analysis, the Fourier transform and frequency space, statistical pattern recognition, and other foundations of the field.

General Education Requirements:

Prerequisites: A grade of C or better in COS 226 or permission of the instructor

Course Typically Offered: Fall, Alternating Years

Credits: 3

COS 475 - Machine Learning

Machine Learning is the study of how to build computer systems that learn from experience. It is a subfield of Artificial Intelligence and requires a good background knowledge in linear algebra (LA) and probability. The course will explain how to build systems that learn and adapt using examples from real-world applications. Main topics covered in this course include supervised learning such as classification and regression, lasso, feature selection, neural networks, random forest, support vector machines, unsupervised learning like PCA, clustering, and GMM, deep convolutional neural network, generative adversarial networks, reinforcement learning, etc. COS 475 and COS 575 cannot both be taken for credit.

Prerequisites: MAT 262 (or MAT 258) and STS 232 (or STS 434 or STS 332 or STS 435)

Course Typically Offered: Spring

Credits: 3

COS 478 - Introduction to Private Machine Learning (AI)

Overview of the role of AI and Machine Learning in improving understanding privacy concepts as well as learning how to develop privacy-preserving and fair data-intensive applications. Topics include Information privacy Fundamentals, differential privacy and its variants; algorithmic tools for differential privacy; applications of differential privacy; and differential privacy in industry.

General Education Requirements:

Prerequisites: Prerequisite: STS 232 or 332 or 434

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.

General Education Requirements:

Prerequisites: Grade of C- or higher in COS 301 or permission.

Course Typically Offered: Every Year

Credits: 3

COS 482 - Introduction to Data Science

Data are everywhere - in every walk of life, people leave digital traces, which are stored and analyzed at both individual and population levels, by businesses for improving products and services, by governments for policy-making and national security, and by scientists for advancing the frontiers of human knowledge. This course serves as an introduction to various aspects of working with data, including data acquisition, cleaning, integration, querying, processing, analysis, and visualization, and data of different types - from structured databases to unstructured images/text. In particular, the course covers both fundamental concepts and computational tools for working with data, and applies them to real datasets and real-world problems.

General Education Requirements:

Prerequisites: COS 226 and ability to code in Python; or instructor 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: Ethics and Writing Intensive Requirements.

Prerequisites: Grade of C- or higher in COS 226 and Junior Standing or permission

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: Capstone

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, if topics differ, for a total of 9 completions and 27 total credits.

General Education Requirements:

Prerequisites: One semester of programming.

Course Typically Offered: Variable

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: Capstone

Prerequisites: Permission.

Course Typically Offered: Fall, Spring, Summer

Credits: 3

Criminal Justice

CRJ 114 - Survey of Criminal Justice

This course is designed to provide an overview of the justice process and the criminal justice system in general. Concepts of crime, deviance and justice will be discussed. Individual rights in a democratic society will be explored, as will the legal definitions of various crimes. The law enforcement, judicial, juvenile justice and corrections subsystems will also be explored, and a number of reform proposals presented.

General Education Requirements: Social Contexts and Institutions

Course Typically Offered: Fall

Credits: 3

CRJ 214 - Introduction to Criminology

This course examines the causes, extent, and nature of crime in American society. Emphasis given to the measurement of crime, the social patterning of criminal behavior, theories of criminal behavior, and the dynamics of types of crime.

General Education Requirements:

Prerequisites: CRJ 114 or SOC 101

Course Typically Offered: Variable

Credits: 3

CRJ 219 - Police and Society

This course will provide students an overview of the history and evolution of the American police system. Topics will include the development and organization of law enforcement agencies, the role of police in society, core police functions, patterns of police-citizen relations, legal issues, and innovations in policing tactics. Students will learn how changes and trends in society affect police operations and will critically examine issues related to law enforcement.

General Education Requirements:

Prerequisites: CRJ 114

Course Typically Offered: Fall

Credits: 3

CRJ 220 - Corrections

This course will introduce students to the goals, purpose, and history of the corrections system within the United States. Students will learn how the American correctional system became a hallmark for the punishment and management of offenders with one of the highest incarceration rates in the world. Students will also examine current issues that professionals in the field of corrections encounter, such as the management of inmates with mental health needs. Examples of topics covered in this class include the establishment of community corrections, the societal impact of mass imprisonment, and the management of inmates with special needs.

General Education Requirements:

Prerequisites: CRJ 114

Course Typically Offered: Spring

Credits: 3

CRJ 240 - Topics in Criminal Justice

A second-level of topics such as "Protest, Contention, & Criminal Justice", "Juvenile Delinquency", "Families and Criminal Justice", and "Cybersecurity, Technology, and Society". May be repeated for credit if the topics differ for total of 9 completions and 27 total credits.

General Education Requirements:

Prerequisites: CRJ 114 or permission

Course Typically Offered: Fall, Spring, Summer

Credits: 1-3

CRJ 301 - Gender and Crime

This course will focus on the four major roles of women in the criminal justice system-women as criminal justice professionals/practitioners. Each of these roles will be examined against the backdrop of the socialization of gender within our culture.

General Education Requirements:

Prerequisites: CJR 114, CRJ 214 and SOC 101

Course Typically Offered: Fall, Alternating years

Credits: 3

CRJ 302 - Race and Crime

This course examines race, crime, and criminal justice in the United States. Topics will include racial/ethnic differences in criminal behavior, in victimization, and in criminal justice involvement. A major focus of the course will concern the issue of possible racial bias in the operation of the criminal justice system and the criminal justice system's disparate impact on people of color.

General Education Requirements:

Prerequisites: SOC 101 and CRJ 114 and CRJ 214

Course Typically Offered: Alternating years

Credits: 3

CRJ 308 - Problems of Violence and Terrorism

This course examines terrorism-related violence, activities, and organizations in the United States and abroad. Students will learn about the historical context for understanding domestic and homegrown violent extremism, emerging trends in violent extremism and terrorism, recruitment and radicalization, and the institutional and behavioral responses to terrorism. By the end of this course, students will understand how terrorism and violent extremist organizations are the result of unique historical and cultural forces, and how they are more dynamic and complex than previously understood.

SOC 308 and CRJ 308 cannot both be taken for credit.

General Education Requirements: Cultural Diversity and International Perspectives' and 'Ethics'

Prerequisites: SOC 101 or CRJ 114; Junior or Senior standing; or with permission

Credits: 3

CRJ 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: Social Contexts and Institutions and Cultural Diversity and International Perspectives

Prerequisites: CRJ 114 or permission.

Course Typically Offered: Spring

Credits: 3

CRJ 324 - Domestic Violence

This class focuses on the extent, nature, causes, and consequences of domestic violence in the United States. Specifically, the course focuses on intimate partner violence, child abuse, child-to-parent abuse, elder abuse, and related topics. This course revolves around three themes: 1) gaining knowledge and insight about domestic violence, 2) understanding the social context of domestic violence, 3) evaluating criminal justice responses to domestic violence.

SOC 324 and CRJ 324 cannot both be taken for credit.

General Education Requirements:

Prerequisites: SOC 101 or CRJ 114; Junior or Senior standing; or with permission

Course Typically Offered: Spring

Credits: 3

CRJ 340 - Intermediate Topics in Criminal Justice

An intermediate-level study of topics such as "Deviance and Horror in Cinema", "Social Entrepreneurship in Cybersecurity", "Power and Change in Criminal Justice". May be repeated for credit if the topics differ for a total of 9 completions and 27 total credits.

General Education Requirements:

Prerequisites: 6 credit hours of CRJ courses or permission

Course Typically Offered: Fall, Spring, Summer

Credits: 1-3

Dance

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. May be repeated for credit for a total of 9 completions with 18 total credits.

General Education Requirements: Artistic and Creative Expression

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 for a total of 9 completions and 18 total credits

General Education Requirements: Artistic and Creative Expression

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 for a total of 9 completions and 18 total credits.

General Education Requirements: Artistic and Creative Expression

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 for a total of 9 completions and 18 total credits.

General Education Requirements: Artistic and Creative Expression

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 for a total of 9 completions and 9 total credits..
(Pass/Fail Grade Only.)

General Education Requirements:

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 for a total of 9 completions and 18 total credits.

General Education Requirements: Artistic and Creative Expression

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 for a total of 9 completion and 18 total credits.

General Education Requirements: Artistic and Creative Expression

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 for a total of 9 completions and 18 total credits.

General Education Requirements: Artistic and Creative Expression

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 for a total of 9 completions and 18 total credits.

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 for a total of 9 completions and 27 total credits.

General Education Requirements:

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 for a total of 9 completions and 27 total credits.

General Education Requirements:

Prerequisites: DAN 122 or permission.

Course Typically Offered: Fall & Spring

Credits: 2-3

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 for a total of 3 completions and 6 credits.

General Education Requirements: Artistic and Creative Expression

Prerequisites: DAN 105 or permission.

Course Typically Offered: Spring

Credits: 2

DAN 206 - Beginner Hip Hop

This course aims to offer the student a greater understanding of Hip Hop Dance and its integrity as an art form. Students will gain a physical and cognitive understanding of body coordination, rhythm, and musicality. Students will also be introduced to the historical context of Hip Hop, which includes the development of its culture and music along with the dance.

Prerequisites: None

Course Typically Offered: Fall

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.

General Education Requirements:

Prerequisites: Prior dance experience or permission.

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 for a total of 9 completions and 18 total credits.

General Education Requirements: Artistic and Creative Expression

Prerequisites: Permission.

Course Typically Offered: Fall & Spring

Credits: 2

Disability Studies

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: Cultural Diversity and International Perspectives and Population and the Environment

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: Cultural Diversity and International Perspectives and Ethics

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: Population and the Environment

Course Typically Offered: Spring

Credits: 3

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.

General Education Requirements:

Prerequisites: Permission.

Course Typically Offered: Fall, Spring, Summer

Credits: 1-6

DIS 490 - Selected Topics in Interdisciplinary Disability Studies

Faculty and students identify and work on selected topics and/or problems related to the area of disability. Focuses on related literature, research, services/supports and materials.

General Education Requirements:

Prerequisites: Permission required.

Course Typically Offered: Variable

Credits: 1-6

Earth and Climate Sciences

ERS 101 - Introduction to Earth Science

A study of earth materials and processes, including their impact on humans. Topics include plate tectonics, mineralogy, formation of igneous, metamorphic and sedimentary rocks, geologic time, weathering and soil formation, evolution of mountain belts, earthquakes, climate change, water cycle, and surface processes. This course may include field trips outside of class time. Laboratory work includes the study of rocks, minerals, topographic maps, and aerial photographs.

General Education Requirements: Lab in the Basic or Applied Sciences

Course Typically Offered: Fall, Spring

Credits: 4

ERS 102 - Environmental Geology

Environmental Geology explores the interaction of humans with the Earth's systems. The course begins with discussions of earth materials and human population dynamics. The science underlying geologic hazards (earthquakes, floods, landslides, etc.) is described and the interaction between geologic hazards and humans is explored. Human impacts on earth systems are identified and evaluated with a focus on pollution and climate change. Sources of energy used by humans and the associated environmental consequences of different energy sources are discussed. May include a one day field trip.

General Education Requirements: Laboratory in the Basic or Applied Sciences and Population and the Environment

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: Applications of Scientific Knowledge and Population and the Environment

Course Typically Offered: Fall, Spring, Summer

Credits: 3

ERS 107 - Energy, Environment, & Climate

Explores the Earth Science concepts that underlie energy, energy sources, the environmental impacts of energy use, and the role of energy in climate. We will consider the ways in which society interacts with and extracts energy from the Earth System, the energy balance of Earth, the climate and environmental implications of energy use, and gain an understanding of renewable and non-renewable energy sources.

General Education Requirements: Applications of Scientific Knowledge and Quantitative Literacy

Course Typically Offered: Fall, Spring, and 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: Applications of Scientific Knowledge and Population and the Environment

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: Population and the Environment

Course Typically Offered: Fall

Credits: 3

ERS 152 - Earth's Changing Climate

Earth harbors a climate that is unique in the solar system, with its ability to sustain liquid water and support life. The geologic record bears witness to spectacular climate changes in the past, the most recent of which heralded the emergence of a complex, globally interconnected human society. Today humans are influencing the climate system in potentially unprecedented ways. The purpose of this course is to understand and evaluate the scientific basis of Earth's climate and past, present, and future change within the climate system, and to provide scientific context for a warming world.

General Education Requirements: Quantitative Literacy and Application of Scientific Knowledge

Course Typically Offered: Fall

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: Writing Intensive and Lab in the Basic or Applied Sciences

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, and 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: Lab in the Basic or Applied Sciences and Population and the Environment

Prerequisites: Any 100-level ERS course.

Course Typically Offered: Spring

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: Laboratory in the Basic or Applied Sciences

Course Typically Offered: Spring, Odd Years

Credits: 4

ERS 301 - 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.

General Education Requirements:

Prerequisites: Any ERS 100 level course or SMS 108 and MAT 111 or a score of 30 or higher on the Math Placement Exam or permission of instructors.

Course Typically Offered: Fall

Credits: 4

ERS 310 - Fields Methods in Earth Sciences

A majority of Earth, environmental, and climate sciences disciplines rely on robust field data collection skills. ERS 310 introduces students to the essential elements of field data collection, documentation and interpretation. The course aims to expand and reinforce practical field data skills that students acquire in introductory level classes and prepare them for advanced education and research in geosphere related disciplines using traditional and modern methods, instrumentation and techniques. Off-campus day trips will explore diverse coastal, glacial, sedimentary, igneous and metamorphic geological settings. Students will work in teams to collect and interpret information, share and discuss their findings, and produce a final comprehensive field report. There is a fee associated with this course for travel expenses.

General Education Requirements:

Prerequisites: ERS 200 or ERS 201 or permission

Course Typically Offered: Summer

Credits: 3

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.

Lec 3, Lab 3

General Education Requirements:

Prerequisites: CHY 121 & 123, and any 100 level ERS course.

Course Typically Offered: Spring, Odd Years

Credits: 4

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: Writing Intensive

Prerequisites: Any 100 level ERS course.

Course Typically Offered: Spring Even Years

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: Writing Intensive

Prerequisites: ERS 200.

Course Typically Offered: Fall, Odd Years

Credits: 4

ERS 317 - Introduction to Geophysics

Introduction to geophysical studies and global geodynamics. Seismological, gravity, magnetic, electrical and geothermal studies of the Earth's lithosphere and cryosphere are emphasized in integrated class, field and laboratory exercises. Course problem solving requires spread sheeting and numerical modeling applications using available personal computers.

General Education Requirements:

Prerequisites: MAT 116 or MAT 126 & PHY 111 or 121 and any 100 level ERS course.

Course Typically Offered: Spring, Even Years

Credits: 4

ERS 319 - Geohazards and Humans

Geohazards and Humans will introduce the scientific principles necessary to understand the underlying causes of the most devastating natural disasters on Earth. Students will learn how to apply modern geological concepts and theories to identify drivers of major geological hazards and reduce their impacts. It is designed for students who major in the geosciences but will also benefit students majoring in environmental science, engineering, public policy and business. A primary goal is to translate a working knowledge of the science of natural hazards into strong critical-thinking and problem-solving skills to prepare students to work with geohazards in their future careers. To meet this goal, the course objectives are to demonstrate the use of geological methods and techniques to study geological hazards, and introduce tools that help to mitigate the impact of these events on humans. Students will learn about established and emerging approaches for reducing the impact of volcanic eruptions, earthquakes, tsunamis, landslides, extra-terrestrial impacts, shifts in climate and anthropogenic pollutants on humans and the global economy.

General Education Requirements: Science Applications and Population and Environment

Prerequisites: Any 100-level Earth Science course or by permission

Course Typically Offered: Spring

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.

General Education Requirements:

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.

General Education Requirements:

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). Recommended: ERS 121 or ERS 240

General Education Requirements: Quantitative Literacy and Population and Environment

Course Typically Offered: Spring, Even Years

Credits: 3

ERS 330 - Earth Materials

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 minerals in the context of the rocks in which they are found, with the aim of gaining a greater understanding of physical and chemical makeup of the Earth. Throughout the course, we relate mineralogy to geologic processes and other fields of Earth Science. Course may include weekend field trips.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: ERS 330 or permission.

Course Typically Offered: Spring, Odd 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.

General Education Requirements:

Prerequisites: MAT 122 or a passing score on UM Math Placement Exam #3.

Course Typically Offered: Spring

Credits: 3

ERS 361 - The Principles of Geomorphology

Focuses on the shapes, dimensions, and dynamics of landforms on Earth. The material covered will provide an introductory understanding of process mechanics and their relation to the genesis and alteration of landforms in varied settings and over a range of scales. Topics covered will include general background on the discipline of geomorphology, internal and climate forces associated with earth surface systems, chemical and physical weathering, drainage basins, fluvial systems, wind generated landforms, glacial processes, karst landscapes, and coastal environments. The course approach will provide attention to landform ontologies, measurement techniques, and analytical frameworks necessary to quantify earth surface measurement and observations. Two one-day weekend field trips may be scheduled during the semester.

General Education Requirements:

Prerequisites: ERS 200 and ERS 201

Course Typically Offered: Fall, Odd Years

Credits: 3

ERS 401 - Paleoceanography

The ocean plays a central role in regulating climate and supporting life on our planet, and it has not always operated as it does today. Throughout Earth history, the ocean has undergone dramatic changes in circulation, temperature, chemical composition, and more. In this course, students will explore our ocean's dynamic past, which provides insight into its present and future behavior. We will discuss key research techniques, major discoveries, and emerging frontiers in the field of paleoceanography (the study of the global ocean's circulation, chemistry, biology, and geology through geologic time). Students will read and discuss key research articles each week that complement lecture material. They will also work with both modern and paleo datasets to enhance their skills and deepen their understanding of how scientists infer past ocean conditions from geologic archives. ERS 401 and ERS 501 cannot both be taken for credit.

General Education Requirements:

Prerequisites: Any 100 level ERS course.

Course Typically Offered: Spring, Odd Years

Credits: 3

ERS 410 - Sea-to-Sky Experience

Many critical processes in the Earth and climate sciences occur at interfaces among the atmosphere, cryosphere, hydrosphere, biosphere, oceans, solid earth, and society. Using an interdisciplinary systems-based approach, as well as the ability to make direct observations, are essential to understanding these processes. ERS 410 will visit a region where a wide range of environments - everything from open ocean ("sea") to glaciers ("sky") - can be experienced. During this travel study course, we will focus on a range of professional and practical skills, including global impact/local relevance research, proposal development, science planning and logistics, risk assessment and mitigation, safety, group dynamics and collaboration, field-based and remote observations, cultural knowledge, and science communication.

General Education Requirements: Capstone

Prerequisites: ERS 200 and ERS 201 and instructor permission

Course Typically Offered: Fall, Spring, Summer

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.

General Education Requirements:

Prerequisites: MAT 116 or MAT 122

Course Typically Offered: Variable

Credits: 3

ERS 425 - How to Build a Habitable Planet

This course will take a journey through the remarkable geologic and climatic events that led to the emergence of life, an oxygen-rich atmosphere, explosions and collapses of biodiversity, waxing and waning of continental ice sheets, and ultimately a planet on which Homo Sapiens could thrive and develop civilizations unlike anything Earth has ever witnessed. We will explore the great and as-yet unsolved mysteries of Earth's evolution with an eye toward placing our existence into the context of what it takes to build, and sustain, a habitable world. We will consider internal and external forces that have shaped environmental evolution over the planet's history, including the role of humans in geochemical and climatic change. We will consider the geochemical proxies and isotopic geochronometers that have improved our understanding of past environments and climates. Our goals are to develop critical thinking and writing skills and a scientific approach to the complex array of feedbacks that govern the evolution of Earth's surface and climate, as well as an appreciation for how past Earth System change can inform current human and societal issues.

ERS 425 and ERS 525 cannot both be taken for credit.

General Education Requirements:

Prerequisites: ERS 200 and ERS 201, or instructor permission

Course Typically Offered: Fall

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 observation 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.

General Education Requirements:

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: Population and the Environment and Writing Intensive

Prerequisites: Any 100 level ERS course or Graduate Standing

Course Typically Offered: Fall

Credits: 3

ERS 444 - Introduction to Glaciology

Glaciers and ice sheets cover a significant portion of the planet and have major impacts on surrounding Earth systems and human communities. Glaciers act as a consistent source of freshwater, they sculpt the Earth's near surface geology, and they can influence tectonics, weather, climate, ocean and surrounding ecosystems. This course will study the life cycle of glaciers and ice sheets, the physics which influence their structure, size, movement, and their interaction with surrounding environments. This course will also explore tools and methods used to study glaciers and ice sheets through practical exercises and experiments. Methods we will explore include classic field glaciological techniques, geochemistry, geophysics, remote sensing, and numerical modeling. Note: ERS 444 and ERS 544 cannot both be taken for credit.

General Education Requirements:

Prerequisites: ERS 200 or ERS 201 and MAT 116 or MAT 126 or permission of the instructor

Course Typically Offered: Spring, Odd Years

Credits: 4

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.

General Education Requirements:

Prerequisites: Any 200-level ERS course or permission.

Course Typically Offered: Spring, Odd Years

Credits: 3

ERS 460 - Marine Geology

Topics include theories of the origin of the earth as a planet and the development of continents and ocean basins, morphology and structure of the sea floor, interpretation of geological and geophysical evidence relevant to the origin and evolution of major tectonic features of oceans. Students may not receive credit for both ERS 460 and ERS 560.

General Education Requirements:

Prerequisites: Any 100 level ERS course.

Course Typically Offered: Spring, Even

Credits: 3.0

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.

General Education Requirements:

Prerequisites: ERS 350 or ERS 588 or instructor permission

Course Typically Offered: Not regularly offered.

Credits: 3

ERS 480 - Introduction to Hydrogeology

The role of groundwater in geologic and water supply processes including: the hydrologic cycle, groundwater interaction with surface water, groundwater flow and transport equations, aquifer characterization, chemistry of groundwater, and groundwater as a geologic agent. ERS 480 and ERS 580 cannot both be taken for credit.

General Education Requirements:

Prerequisites: Any 100 level ERS course and MAT 116 or MAT 126.

Course Typically Offered: Fall, Odd 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.

General Education Requirements:

Prerequisites: Senior standing.

Course Typically Offered: Fall, Spring, Summer

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: Capstone

Prerequisites: Senior standing and permission

Course Typically Offered: Fall, Spring and Summer

Credits: 4-6

Ecology and Environmental Sciences

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: Population and the Environment

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.

General Education Requirements:

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 141 this course satisfies the Gen Ed Lab in Basic or Applied Sciences

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 217 - Field Research Experience in Ecology and Environmental Sciences

This course is an intensive field experience for EES majors. EES undergraduates will stay at a remote site (e.g., Schoodic Education and Research Center at Acadia National Park) for an intensive multi-day program that will immerse them in the rich science and cultural history that makes Maine a living laboratory for environmental issues. Students will be challenged to identify and assess emerging issues in environmental science and natural resources management. Students will be introduced to relevant problems or issues 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 field setting is rich with opportunities for outdoor experience, interactions with scientists in residence, and varied local, regional, and national stakeholders with whom they will collaborate. This course is a required field experience for EES majors.

General Education Requirements:

Course Typically Offered: Fall and Summer

Credits: 0-2

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: Population and the Environment

Prerequisites: Sophomore standing.

Course Typically Offered: Fall

Credits: 3

EES 351 - Energy, Wealth, and Power: a Biophysical Systems view of Nature and Society

Within the biophysical economics paradigm, energy is the unseen arbiter that drives ecological and economic processes. Biophysical systems of nature and human society are organized according to seemingly universal laws that govern the concentration, conversion, and degradation of energy over space and time. These laws explain historic patterns in ecological and societal evolution and provide a framework for responding to planetary crises of climate change, peak energy, and unpayable ecological debt. Students will apply biophysical systems principles of energy return on investment (EROI), energy hierarchy, transformity, embodied energy (eMergy), and maximum eMpower to better understand the past and better prepare for the future in a rapidly-degrading ecosphere. Students will read historic and current literature, participate in (and sometimes lead) interactive class discussions, and complete individual- or group-projects.

General Education Requirements: Population and the Environment

Prerequisites: Junior standing or instructors permission.

Course Typically Offered: Spring

Credits: 3

EES 390 - Junior 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 for career development, such as professional and public presentations, job search skills, and career planning. Provides experiences with a variety of academic cultures and professionals.

General Education Requirements:

Prerequisites: Junior Standing in Ecology and Environmental Sciences

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.)

General Education Requirements:

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.

Course may be repeated for credit, if topics differ, for a total of 9 completions and 9 total credits.

General Education Requirements:

Prerequisites: Ecology and Environmental Sciences major or permission of instructor.

Course Typically Offered: Fall, Even Years

Credits: 1-3

EES 398 - Special Seminar In Ecology and Environmental Science

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. Course may be repeated for credit, if topics differ, for a total of 9 completions and 27 credits. Pass/fail.

General Education Requirements:

Prerequisites: Department consent required.

Course Typically Offered: Variable

Credits: 1-3

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 and include overnight and weekend travel. There is a fee associated with this course for travel expenses. The course MAY meet weekly prior to and following the travel component. Course may be repeated for credit for a total of 3 completions and 9 total credits.

General Education Requirements:

Prerequisites: BIO 319 or WLE 200 or SMS 300 or permission

Course Typically Offered: Spring

Credits: 1-3

EES 489 - Critical Issues in Ecology and Environmental Sciences

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. Students use quantitative tools, undertake critical reading and synthetic writing, and further develop science literacy skills.

General Education Requirements: Capstone and Writing Intensive

Prerequisites: Ecology and Environmental Sciences major or minor with senior standing.

Course Typically Offered: Fall

Credits: 4

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. Course may be repeated for a total of 9 completions and 27 total credits.

General Education Requirements:

Prerequisites: Ecology and Environmental Sciences major.

Course Typically Offered: Fall, Spring, Summer

Credits: 1-4

Economics

ECO 105 - 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: Population and the Environment

Course Typically Offered: Variable

Credits: 3

ECO 112 - Economics of Social Issues and Ethical Dilemmas

This course applies economic principles to important contemporary social issues. A wide range of subjects is explored, ranging from clearly economic subjects such as unemployment and globalization to painful social problems such as crime and poverty to seemingly noneconomic concerns such as organ transplants and illegal drug use. The theme unifying the topics is the ethical dilemmas that lie beneath the surface. Thus, widely held beliefs are challenged and critically examined in this course. Investigation of contemporary social problems using the lens of economics should deepen students' awareness and understanding of significant current events and their underlying ethical tradeoffs. This course also introduces and develops an appreciation of the fundamental principles and analytical framework of economics. The goal of the course is to broaden and deepen the students' understanding of both social issues and economics.

General Education Requirements: Ethics

Course Typically Offered: Fall, Alternating

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.

General Education Requirements:

Prerequisites: Economics/Financial Economics Major

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: Social Contexts and Institutions

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: Social Contexts and Institutions

Course Typically Offered: Fall, Spring, Summer

Credits: 3

ECO 154 - 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 will develop a hands-on project that integrates Excel to create a purposeful model.

General Education Requirements: Social Context and Institutions

Course Typically Offered: Spring, Summer, Fall

Credits: 3

ECO 160 - Freakonomics

The primary lesson of economics is that incentives matter: economic agents alter their behavior in predictable ways when faced with changing costs and benefits. Over the past 30 years, the power of economics as a predictive social science has been demonstrated time and time again as scholars have shown that seemingly uneconomic decisions can be modeled from an economic perspective. In this course, we will use academic readings and popular books such as Freakonomics to indicate the breadth and scope of questions that can be analyzed from an economic perspective.

General Education Requirements: Western Cultural Tradition and Social Context & Institutions

Course Typically Offered: Spring

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: Population and the Environment and Social Contexts and Institutions

Course Typically Offered: Spring

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: Population and the Environment and Social Contexts and Institutions

Course Typically Offered: Fall, Spring and Summer

Credits: 3

ECO 220 - Intermediate Microeconomic Theory

A study of how individual choice allocates goods and resources in market economies.

General Education Requirements:

Prerequisites: C- or better in ECO 120 and ECO 121

Course Typically Offered: Fall & Spring

Credits: 3

ECO 221 - 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.

General Education Requirements: Social Contexts and Institutions

Prerequisites: Grade of C- or better in ECO 120 and ECO 121

Course Typically Offered: Fall & Spring

Credits: 3

ECO 240 - Maine Economy

An in-depth analysis of the Maine economy, including its history, socio-economic trends, influential institutions, economic performance, aging demographics and the labor force, environmental impact, food security, international trade, and the distribution of income. Maine's economic strengths and opportunities along with its weaknesses and threats will also be explored. Lastly, a comprehensive review of past and current State level economic growth and development strategies will be presented and analyzed for their achievements and shortcomings.

General Education Requirements: Western Cultural Tradition

Prerequisites: Grade of C- or better in ECO 120 and ECO 121, or permission

Course Typically Offered: Fall, Odd Years

Credits: 3

ECO 266 - Principles of 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.

General Education Requirements:

Prerequisites: A grade of C- or better in STS 215, STS 232, STS 332, STS 434 or PSY 241

Course Typically Offered: Fall and 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.

General Education Requirements: Social Contexts and Institutions

Prerequisites: C- or better in ECO 120

Course Typically Offered: Variable

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: Cultural Diversity and International Perspectives

Prerequisites: Grade of C- or better in ECO 120 and ECO 121 or permission

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: Cultural Diversity and International Perspectives

Prerequisites: Grade of C- or better in ECO 120 and ECO 121 or permission

Course Typically Offered: Fall

Credits: 3

ECO 353 - Money and Banking

Examines the American banking and financial system including monetary theory and policy.

General Education Requirements:

Prerequisites: Grade of C- or better in ECO 120 and ECO 121 or permission

Course Typically Offered: Spring

Credits: 3

ECO 363 - Game Theory

This course provides an introduction to game theory and its application in economics. Students will study a series of games that capture various aspects of strategic interaction - including well-known games such as Prisoner's Dilemmas, Arms Races, Auctions, and Voting Mechanisms. Each game will be motivated by a common problem faced by decision-makers in the real world. Students will play versions of each game for themselves and analyze outcomes from similar games in the real world. Students will then use the tools of economics and game theory to study how behavior is influenced by the nature of the game itself, such as available information, beliefs about other players, and the interrelatedness of outcomes.

General Education Requirements:

Prerequisites: A grade of C- or better in the following: ECO 120 and one of the following: MAT 115, MAT 116, MAT 122, MAT 126 or MAT 136

Course Typically Offered: Spring

Credits: 3

ECO 370 - Topics in Economics

Includes readings, research and discussions. Topics vary depending on faculty and student interests. May be repeated for credit, if topics differ, for a total of 9 completions and 27 total credits.

General Education Requirements:

Prerequisites: Grade of C- or better in ECO 120 and ECO 121 or permission

Course Typically Offered: Fall & Spring

Credits: 1-3

ECO 377 - Environmental Economics and Policy

This course takes an economics-based approach to the study of environmental issues, including how economists' value environmental resources and address market failures. Contemporary environmental economics problems and policies are presented.

General Education Requirements: Social Contexts and Institutions and Population and the Environment

Prerequisites: A grade of C- or better in ECO 120

Course Typically Offered: Fall

Credits: 3

ECO 381 - SL: Sustainability Science, Policy, and Action

Sustainability concerns not just environmental balance but also social, economic, cultural and ethical factors - that is, nearly everything. Sustainability science is the research field that attempts not only to study this unwieldy group of subjects, but also to motivate positive change toward more sustainable societies. This course explores the scientific foundation of the global environmental sustainability crisis, the economic, social and ethical ramifications of that crisis, and surveys the prospects and challenges in the quest to define, measure and achieve sustainable societies. We also step beyond the academic classroom to accomplish sustainability research and service in the larger community with a semester-long integrated service learning project. This course has been designated as a UMaine service-learning course.

General Education Requirements: Population and the Environment and Ethics

Prerequisites: Sophomore standing.

Course Typically Offered: Variable

Credits: 3

ECO 385 - Econometrics

Introduction to the models and methods used to estimate relationships and test hypotheses pertaining to economic variables. Among the topics covered in the course are: Single and multiple regression analysis; functional forms; omitted-variable analysis; multicollinearity; heteroskedasticity; and simultaneous equations models. Practical application of regression techniques, including the use of coding and statistical software, occupies second half of the course.

General Education Requirements: Quantitative Literacy

Prerequisites: A grade of C- or better in ECO 220 and ECO 266

Course Typically Offered: Spring

Credits: 3

ECO 391 - Introduction to Growth and Development

Development Economics examines one of the most important economic, political, and moral challenges of our time. Namely, the demand for economic growth and development in low-income countries, and the prospects for their transformation into modern, globalized, and high-income economies.

General Education Requirements: Western Cultural Tradition
Prerequisites: Grade of C- or better in ECO 120 and ECO 121 or permission
Course Typically Offered: Spring
Credits: 3

ECO 395 - Field Experience

Upon obtaining an internship, students may seek approval for their economics-related work experience to count for credit towards their degree. Students must obtain approval from the department prior to being enrolled. Up to 12 total ECO 395 credits are allowed to count towards any School of Economics degree. May be repeated for credit for a total of 12 completions and 12 total credits.

General Education Requirements:
Prerequisites: Permission required to take course. Must have an internship proposal submitted to the internship/undergraduate coordinator.
Course Typically Offered: Fall, Spring, Summer
Credits: 1-6

ECO 403 - Experimental Economics

Experimental research continues to demonstrate that the economic decisions of individuals and groups deviate, sometimes dramatically, from those predicted by standard economic theory's rational actor model. Experimental economics seeks to explain the economic decision-making of consumers and citizens, as psychologically complex, cognitively limited, emotional, social decision-makers. This course explores the foundations, methods and outcomes of experimental economics. Topics covered include experimental economics ethics, basics of experimental design in economics, opportunities, challenges and limitation of experimental methods, analysis of experimental data and key contributions to the economic literature. ECO 403 and ECO 503 cannot both be taken for credit.

Prerequisites: A grade of C- or better in ECO 220
Course Typically Offered: Fall, alternating
Credits: 3

ECO 404 - Behavioral Economics

Research continues to demonstrate that the economic decisions of individuals and groups deviate, sometimes dramatically, from those predicted by standard economic theory's rational actor model. Behavioral economics seeks to explain the economic decision-making of consumers and citizens, as psychologically complex, cognitively limited, emotional, social decision-makers. This course explores the foundations of behavioral economics and how this rapidly changing subfield informs the larger field of economics. Topics include bounded rationality, prospect theory, reference dependence, social preferences, anchoring, framing, and priming, moral balancing, and applications of behavioral economics to public policy. ECO 404 and 504 cannot both be taken for credit.

General Education Requirements: Social Context and Institutions.
Prerequisites: A grade of C- or better in ECO 220
Course Typically Offered: Fall
Credits: 3

ECO 405 - SL: Sustainable Energy Economics & Policy

This course examines tradeoffs associated with the technical, economic, environmental, and social implications of energy supply, distribution, and use in the context of transitioning toward a sustainable energy future. Students examine a variety of renewable and non-renewable energy options for electricity, heating and transportation. Students assess quantitative and qualitative indicators of sustainability related to greenhouse gas (GHG) emissions and climate change, air and water quality, human health and safety, energy security, wildlife and the environment, technological efficiency and availability. They examine the effect of policies (e.g., carbon prices, emissions targets, efficiency requirements, renewable portfolio standards, feed-in tariffs) on these indicators and tradeoffs. The course provides brief introductions to environmental life cycle assessment (LCA), social benefit cost analysis (SBCA) and multi-criteria decision analysis (MCDA), as they apply to energy issues. Students apply course concepts to a service-learning project in which they work with people from surrounding communities on local sustainable energy solutions. Field trips may be required. Students may not receive credit for both ECO 405 and ECO 505.

General Education Requirements: Population and Environment and Quantitative Literacy

Prerequisites: A grade of C- or better in ECO 220, or a B- or better in ECO 180 or have a Minor in Energy Economics & Policy or Renewable Energy Engineering or Renewable Energy Science & Technology

Course Typically Offered: Variable

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.

Note: This course is for non-economics majors only. It cannot be taken for degree credit towards the completion of any School of Economics undergraduate degree program. ECO cannot be taken for credit if a student has taken either ECO 120 or ECO 121.

General Education Requirements:

Prerequisites: Baccalaureate degree or Junior/Senior standing and minimum GPA of 3.25, or permission

Course Typically Offered: Fall

Credits: 3

ECO 426 - Regional Economics: Policy and Practice

This course is about U.S. regional economic development, with an emphasis on policy and practice (i.e., the types of strategies used by regions to promote economic development). Topics include business climate and taxes; industry clusters; human capital; the importance of small businesses; technology-based approaches to economic development; amenities; and aspects of new growth (e.g., residential development, people moving into a region).

General Education Requirements:

Prerequisites: A grade of C- or better in ECO 220 or ECO 221 or permission

Course Typically Offered: Alternate years

Credits: 3

ECO 427 - Regional Economics: Modeling

Analysis and measurement of changes in state and local economies. Emphasis on analytical tools, such as input-output modeling. ECO 427 and 527 cannot both be taken for credit.

General Education Requirements:

Prerequisites: A grade of C- or better in ECO 220 and ECO 221 and MAT 126 or permission

Course Typically Offered: Alternating Years

Credits: 3

ECO 433 - Labor Economics

This course examines various types of labor-market data; such as earnings, unemployment, and labor-force participation. It explores theories of labor demand, labor supply, and human capital. This course examines some of the important factors that make labor markets unique; such as matching, implicit contracts, and bargaining power. Theories explaining significant differences in earnings (e.g., hedonic wages and discrimination) are developed. Income inequality and the effects of international trade are examined. Throughout the course, the effects of important public policies (e.g., minimum wage laws, taxes, and various forms of social insurance) are explored. Empirical evidence is also emphasized throughout the course.

General Education Requirements: Ethics

Prerequisites: C- or better in ECO 220 or permission

Course Typically Offered: Spring, Alternating Years

Credits: 3

ECO 442 - Health Economics

This course surveys major topics in health economics including: the economic determinants of health; the market for health care and insurance; the role of government. We focus on the health system in the United States with comparisons to other countries, as well as health system reform. We also consider special topics including: the health endowment; business cycles and health; socio-economic gradients in health; health externalities; health behaviors and outcomes.

General Education Requirements: Social Contexts and Institutions

Prerequisites: C- or better in ECO 220 or permission

Course Typically Offered: Variable

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.

General Education Requirements:

Prerequisites: C- or better in ECO 220 or permission

Course Typically Offered: Variable

Credits: 3

ECO 453 - Financial Economics

Examines the economics of financial markets, asset pricing, risks, and decision making in the face of uncertainty. Topics include the time value of money, the efficient market hypothesis, optimal portfolio allocation, and the capital asset pricing model.

General Education Requirements:

Prerequisites: A grade of C- or better in ECO 220 and in either MAT 116 or MAT 126 or permission

Course Typically Offered: Alternate Years

Credits: 3

ECO 470 - Independent Capstone

This course is for students interested in completing an independent capstone project. Students must work with a faculty advisor to complete a research paper on an economic topic of their choosing.

General Education Requirements: Writing Intensive and Capstone

Prerequisites: Permission required. Must have a faculty mentor before course registration.

Course Typically Offered: Variable

Credits: 3

ECO 471 - Public Finance and Fiscal Policy

This course examines the effects of government spending and taxation. The course explores the various ways that markets fail to achieve socially optimal outcomes, which justifies government provision of some products such as education, pension (i.e., Social Security), medical insurance (Medicaid and Medicare), public assistance, and so forth. The course also studies the effects of various taxes needed to finance these and other types of government spending.

General Education Requirements: Social Contexts and Institutions

Prerequisites: C- or better in ECO 220 or permission

Course Typically Offered: Alternating Years

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: Social Contexts and Institutions, Writing Intensive, Capstone

Prerequisites: A grade of C- or better in ECO 220 and ECO 221

Course Typically Offered: Not Regularly Offered

Credits: 3

ECO 477 - Natural Resource Economics and Policy

This course explores ways in which economic analysis can be used to inform and improve the management of natural resources. The goal of this course is to introduce students of the concepts of economics and how they relate to natural resource management. This course will cover topics, such as: How economists view the natural environment; Economic theory of resource exploitation (renewable and nonrenewable resources); The use of natural resources and their regulation; and The effect of economic activity on the natural environment (and vice versa).

General Education Requirements: Population and the Environment

Prerequisites: C- or better in either ECO 220

Course Typically Offered: Every other spring

Credits: 3

ECO 480 - Introduction to Mathematical Economics

Mathematics used as a language in presenting concepts of economic theory.

General Education Requirements:

Prerequisites: A grade of C- or better in ECO 220 and in one of the following: MAT 116, MAT 126, MAT 127, or MAT 136

Course Typically Offered: Variable

Credits: 3

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, queuing models, and simulation modeling.

General Education Requirements:

Prerequisites: A grade of C- or better in ECO 220 or ECO 221 or permission

Course Typically Offered: Variable

Credits: 3

ECO 489 - Senior Capstone

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.

General Education Requirements: Writing Intensive and Capstone

Prerequisites: Senior Standing in School of Economics; a grade of C- or better in ECO 220, ECO 221, and ECO 266

Course Typically Offered: Fall

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. Permission required. Must have an internship proposal submitted to the internship/undergraduate coordinator. May be repeated for credit for a total of 9 completions and 27 total credits.

General Education Requirements:

Prerequisites: Permission required. Must have an internship proposal submitted to the internship/undergraduate coordinator.

Course Typically Offered: Fall & Spring

Credits: 3

ECO 497 - Independent Studies

Student-driven independent research of an economic topic. Students are required to have a faculty supervisor before being enrolled in this course. Permission required. Must have a faculty mentor before course registration. May be repeated for additional credit.

General Education Requirements:

Prerequisites: Permission required. Must have a faculty mentor before course registration.

Course Typically Offered: Fall, Spring, Summer

Credits: 1-3

Education Human Development

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.)

General Education Requirements:

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. Course note: Criminal History and Records Check (CHRC) required prior to enrollment.

General Education Requirements: Writing Intensive

Prerequisites: ENG 101 or equivalent. Restricted to Elementary, Secondary, Kinesiology and Physical Education Teaching/Coaching, Child Development and Family Relations for Early Childhood Education majors only or Education minors only. Department consent and CHRC required.

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: Cultural Diversity and International Perspectives and Writing Intensive

Prerequisites: ENG 101 or equivalent; Restricted to Elementary, Secondary, Kinesiology & Physical Education Teaching/Coaching and Outdoor Leadership, Child Development and Family Relations-Early Childhood, Art & Music Education majors or education minor

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.

General Education Requirements:

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, 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.

General Education Requirements:

Prerequisites: Teacher Candidacy status or 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.

General Education Requirements:

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. EHD 301 and EHD 511 cannot both be taken for credit.

General Education Requirements:

Prerequisites: Teacher Candidacy status or Child Development and Family Relations (ECE) or acceptance into Education minor.

Course Typically Offered: Fall and Spring

Credits: 3

EHD 320 - Educational Assessment

The theory and practice of educational assessment. Topics include descriptive statistics; reliability and validity; and designing, scoring, evaluating, and using assessments. Both teacher-made assessments and standardized assessments will be considered.

General Education Requirements:

Prerequisites: Elementary or Secondary Education major or Child Development and Family Relations-Early Childhood Education option major who has been admitted to teacher candidacy.

Course Typically Offered: Fall, Spring, Summer

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. Course may be repeated for credits for a total of 54 credits.

General Education Requirements:

Prerequisites: Teacher Candidacy status for Elementary Education majors; EHD 204 and SED 302.

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.

General Education Requirements:

Course Typically Offered: Spring

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 may be repeated for a total of 9 Completions and 54 total credits.

General Education Requirements:

Course Typically Offered: Variable

Credits: 1-6

EHD 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.

General Education Requirements:

Prerequisites: Teacher Candidacy status for Secondary Education majors; EHD 204 and SED 302.

Corequisites: EHD 400

Course Typically Offered: Fall & Summer

Credits: 3

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: Capstone

Prerequisites: Teacher Candidacy status for Elementary Education majors and senior standing.

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: Capstone

Prerequisites: Teacher Candidacy status for Secondary Education majors and senior standing.

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.

General Education Requirements:

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.

Course may be repeated a total of 2 completions with 6 total credits.

General Education Requirements: Capstone

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: Capstone

Prerequisites: Senior standing; EHD 202 and EHD 202 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.)

Course may be repeated for credit for a total of 54 credits.

General Education Requirements: Capstone

Prerequisites: EHD 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.)

Course may be repeated for credit for a total of 54 credits.

General Education Requirements: Capstone

Prerequisites: EHD 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.

General Education Requirements:

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: Capstone

Prerequisites: Teacher Candidacy status for Kinesiology & Physical Education majors and senior standing

Course Typically Offered: Fall & Spring

Credits: 1 - 12

Education Language Learning

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.

General Education Requirements:

Prerequisites: junior standing.

Course Typically Offered: Fall & Summer

Credits: 3

ELL 477 - Curriculum and Assessment in ESL/EFL Contexts

This course develops an understanding of the purposes of assessments that inform curriculum development and increase ELL academic language acquisition while also developing high-level, content-specific knowledge and skills. Designed for practicing teachers with ELL student in their classes, those 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.

General Education Requirements:

Prerequisites: INT 410

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.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: Junior standing.

Course Typically Offered: Variable

Credits: 3

Education Literacy

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.

General Education Requirements:

Prerequisites: Teacher candidacy required and English Literature Course or by permission.

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.

General Education Requirements:

Prerequisites: Teacher candidacy required or by permission.

Course Typically Offered: Fall & Spring

Credits: 3

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.

General Education Requirements:

Prerequisites: Teacher Candidacy status for Elementary Education majors; EHD 204 and SED 302 or by permission

Corequisites: EHD 400

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.

General Education Requirements:

Prerequisites: Teacher Candidacy status for Secondary Education majors; EHD 204 and SED 302 or by permission.

Corequisites: EHD 400

Course Typically Offered: Fall

Credits: 3

ERL 441 - Methods of Teaching English in the Secondary School

This is a teaching methods course for future English/Language Arts teachers at the middle and secondary school levels. Students explore a variety of teaching strategies for organizing a secondary English/Language Arts curriculum, utilizing the national standards of the Common Core, and planning, implementing, and assessing appropriate instruction using current best practices for the effective teaching of English/Language Arts. The course includes a mandatory field experience.

General Education Requirements:

Prerequisites: Admission to Teacher Candidacy in English Education (Secondary) or instructor permission

Course Typically Offered: Fall

Credits: 3

ERL 472 - Language and Linguistics

Provides future English and world language teachers with a knowledge of linguistics as it impacts the classroom. Covers the nature and characteristics of human language, the components of language, language change and language variation, the history of the English language, and linguisticism. If this course was taken under as a topics course in EHD 472, it cannot be repeated for credit.

General Education Requirements:

Course Typically Offered: Spring

Credits: 3

Education Mathematics

EMA 314 - Teaching Mathematics in Elementary School

An instruction to methods and techniques in teaching mathematics, arithmetic readiness program, instructional and evaluation material.

General Education Requirements:

Prerequisites: Teacher Candidacy status for Elementary Education majors; EHD 204 and SED 302 or permission.

Corequisites: EHD 400

Course Typically Offered: Fall & Spring

Credits: 3

EMA 405 - Mathematics for Secondary Teachers

This is a three (3) credit-hour course for prospective secondary mathematics teachers. We will investigate the teaching of secondary mathematics from mathematical, philosophical, and practical perspectives.

General Education Requirements:

Prerequisites: Teacher Candidacy status, Calculus 1 or by permission

Course Typically Offered: Fall

Credits: 3

Education Science

ESC 316 - Teaching Science in the Elementary School (K-8)

Presents information and activities designed to encourage students to learn and develop goals and objectives, instructional strategies, selection of curriculum materials K-8, effective management and evaluation techniques.

General Education Requirements: Writing Intensive

Prerequisites: Teacher Candidacy status for Elementary Education majors; EHD 204 and SED 302 or by permission.

Corequisites: EHD 400

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. ESC 452 and ESC 552 cannot both be taken for credit.

General Education Requirements: Writing Intensive

Prerequisites: Teacher Candidacy status for Secondary Education majors; EHD 204 and SED 302 or by permission.

Corequisites: EHD 400

Course Typically Offered: Fall

Credits: 3

Education Social Studies

ESS 315 - Teaching Social Studies in the Elementary School

Examines methods and materials for social studies in the elementary school and ways of relating the work of the social studies class to an understanding of practical problems of the community.

General Education Requirements: Western Cultural Tradition

Prerequisites: Teacher candidacy required, EHD 204 and SED 302 or by permission.

Corequisites: EHD 400

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.

General Education Requirements:

Prerequisites: Teacher Candidacy status for Secondary Education majors; EHD 204 and SED 302 or permission.

Corequisites: EHD 400

Course Typically Offered: Fall

Credits: 3

Education Special Education

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.

General Education Requirements:

Prerequisites: Art Education, Music Education, Teacher Candidacy, or EDU Minor or permission.

Course Typically Offered: Fall & Spring

Credits: 3

Education Telecommunications

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, and Secondary English majors.

General Education Requirements:

Prerequisites: Elementary, Secondary, KPE Teaching/Coaching Concentration, Child Development and Family Relations for Early Childhood Education majors only or Education minors

Course Typically Offered: Fall & Spring

Credits: 3

Electrical and Computer Engineering

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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: Engineering or Pre-Engineering Majors or permission

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. May be repeated for credit for a total of 9 completions and 27 total credits as long as topics differ.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: MAT 127

Corequisites: PHY 122

Course Typically Offered: Fall and Spring

Credits: 3

ECE 210 - Electric Circuits I

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.

Prerequisites: MAT 127

Corequisites: PHY 122

Course Typically Offered: Fall & Spring

Credits: 3

ECE 214 - Electric Circuits II

Extension of ECE 210 introducing frequency response, basic filters, Bode plots, and Fourier Series, with lab exercise and circuit simulations to demonstrate concepts. 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: Writing Intensive

Prerequisites: ECE 210

Course Typically Offered: Spring

Credits: 4

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.

General Education Requirements:

Prerequisites: ECE 177

Course Typically Offered: Spring

Credits: 4

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.)

General Education Requirements:

Prerequisites: ECE 177.

Course Typically Offered: Fall

Credits: 3

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.

General Education Requirements:

Prerequisites: MAT 258 or MAT 259 and a grade of C- or better in ECE 210.

Course Typically Offered: Fall

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.

General Education Requirements:

Prerequisites: MAT 127

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.

General Education Requirements:

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. Digital efforts are concentrated in the CMOS and pseudo-NMOS areas.

General Education Requirements: Writing Intensive

Prerequisites: ECE 214 and at least a C- in ECE 210

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.)

General Education Requirements:

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.

General Education Requirements:

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 for a total of 9 completions and 27 total credits. (Pass/Fail Grade Only.)

General Education Requirements:

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.

General Education Requirements:

Prerequisites: ECE 342 and either ECE 314 or ECE 351; Electrical Engineering Majors

Course Typically Offered: Fall, Spring, Summer

Credits: 2

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.)

General Education Requirements:

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: Writing Intensive and Capstone

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.

General Education Requirements:

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: 2

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.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: ECE 314

Course Typically Offered: Spring

Credits: 3

ECE 417 - Mobile Robotics

This course focuses on Mobile Robots: the robots like a self-driving car that move around. This is in contrast to Robotic arms installed in factories for automatic production. In this course, the students will focus on getting a taste of and understanding the basics of a wide range of robotics technology, including mathematical fundamentals, algorithms and programming. The students will learn the basic algorithms for robotic perception (understanding the world around the robot), mapping (creating a model of the environment around the robot), localization (tracking the position of the robot in the environment), planning and control (robotic decision-making to achieve a desired outcome).

General Education Requirements:

Prerequisites: MAT 258 or MAT 262 and COS 125 or COS 135 or COS 220 or ECE 177 or MEE 125 or Instructor Permission

Corequisites: ECE 316 or STS 332 or CHE 350

Course Typically Offered: Spring

Credits: 3

ECE 427 - Electric Power Systems

Power system models, power flow solutions, fault analysis, protective relaying.

General Education Requirements:

Prerequisites: At least a C- in ECE 210.

Course Typically Offered: Fall

Credits: 4

ECE 435 - Network Engineering

Focuses on the engineering aspects of data networks including physical media and interconnections, signals and noise, modulation, multiplexing, frame and packet transmission, routing, network design and network management. Problem solving and diagnostic methods, legal and professional issues, ethics and policies, and security aspects of interconnected networks are discussed. Students gain hands-on experience and complete networking projects.

General Education Requirements:

Prerequisites: COS 331 or ECE 331 or ECE 471

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.

General Education Requirements:

Prerequisites: ECE 314 and ECE 342

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.)

General Education Requirements:

Prerequisites: ECE 342.

Course Typically Offered: Spring

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.

General Education Requirements:

Prerequisites: ECE 314

Course Typically Offered: Fall

Credits: 3

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.)

General Education Requirements:

Prerequisites: ECE 351.

Course Typically Offered: Fall

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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: CHY 122 or CHY 131 and PHY 122 and MAT 258

Course Typically Offered: Fall

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.

General Education Requirements:

Prerequisites: CHY 121 or CHY 131 and PHY 122.

Corequisites: MAT 258.

Course Typically Offered: Fall

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

General Education Requirements:

Prerequisites: PHY 122 and CHY 121 or 131;

Corequisites: MAT 258

Course Typically Offered: Spring

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.)

General Education Requirements:

Prerequisites: junior standing in engineering.

Course Typically Offered: Fall and Summer

Credits: 3

ECE 466 - Sensor Technology and Instrumentation

Design and fabrication techniques for piezoelectric, thin film, fiber optic and silicon based sensors. Topics include: cutting, polishing and cleaning crystals, the deposition of electrodes and sensing elements and sensor characterization. Students will design, fabricate and test a sensor.

General Education Requirements:

Prerequisites: ECE 465

Course Typically Offered: Spring

Credits: 4

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.

General Education Requirements:

Prerequisites: ECE 209 or ECE 210 or permission.

Course Typically Offered: Spring

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.

General Education Requirements:

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.)

General Education Requirements:

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.

General Education Requirements:

Prerequisites: ECE 271.

Course Typically Offered: Variable

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.

General Education Requirements:

Prerequisites: ECE 271.

Course Typically Offered: Spring

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.

General Education Requirements:

Prerequisites: ECE 314 and ECE 316.

Course Typically Offered: Spring

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.

General Education Requirements:

Prerequisites: ECE 177 and ECE 314.

Course Typically Offered: Spring

Credits: 4

ECE 490 - Neural Networks

This course introduces the fundamentals of artificial neural networks. It provides lessons on supervised and unsupervised learning in single and multi-layer networks, software implementation overview and applications in speech, text and image analysis. If this course was taken as ECE 498 topic: Neural Networks, it cannot be repeated for credit.

Prerequisites: Permission

Corequisites: ECE 316 or STS 332 or CHE 350, MAT 258, and either ECE 177 or COS 220

Course Typically Offered: Spring

Credits: 3

ECE 491 - Deep Learning

This course is an introduction to deep learning, a branch of machine learning concerned with the development and application of deep artificial neural networks. Topics include convolution neural networks, recurrent neural networks, and their applications for various engineering and scientific problems. Students should know at least one high-level programming language. This course will use Python and give tutorials on Python programming. Students will gain hands-on experiences of developing, training, and evaluating deep learning models to solve sophisticated problems. ECE 491 and ECE 591 cannot both be taken for credit.

General Education Requirements:

Prerequisites: ECE 177 or COS 220 or CIE 115 or MEE 125 or permission

Course Typically Offered: Fall, Alternating years

Credits: 3

ECE 498 - Selected Topics in Electrical and Computer Engineering

Topics in electrical engineering not regularly covered in other courses. May include advanced microprocessor applications, robot applications, instrumentation semiconductor technology, introduction to VLSI design and microwave acoustics. Content can be varied to suit current needs. May be repeated for credit, with departmental permission, if topics differ for a total of 9 completions and 27 total credits

General Education Requirements:

Prerequisites: permission.

Course Typically Offered: Fall & Spring

Credits: 1-3

Electrical Engineering Technology

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. Students who take EET 100 after ECE 101 will only receive credit and grade for EET 100.

General Education Requirements: Writing Intensive

Prerequisites: Electrical Engineering Technology majors only

Course Typically Offered: Fall

Credits: 4

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. Students who take EET 111 after ECE 210 will only receive credit and grade for EET 111.

General Education Requirements:

Corequisites: MAT 122.

Course Typically Offered: Spring

Credits: 4

EET 115 - Creative Design Using CAD

This course will provide students with the fundamentals of AutoCad and its 3D modeling counterpart, Fusion360. In addition to industry-specific drawings such as electrical distribution one-line diagrams, construction prints, and surveying plots, students will be asked to create user interfaces and 3D models that utilize aesthetic design principles. The semester will culminate in an artistic peer-reviewed 3D design project.

General Education Requirements: Artistic and Creative Expression

Prerequisites: EET majors only or Permission

Course Typically Offered: Spring

Credits: 3

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.

Students who take EET 241 after ECE 342 will only receive credit and grade for EET 241.

General Education Requirements:

Prerequisites: EET 111 or permission.

Course Typically Offered: Fall

Credits: 4

EET 274 - Introduction to Microcontrollers

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. Students who take EET 274 after ECE 177 or after ECE 271 will only receive credit and grade for EET 274.

General Education Requirements:

Prerequisites: EET 111 or EET 330

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. Students who take EET 275 after ECE 275 will only receive credit and grade for EET 275.

General Education Requirements:

Course Typically Offered: Fall

Credits: 4

EET 276 - Programmable Logic Controllers

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.

General Education Requirements:

Course Typically Offered: Fall

Credits: 4

EET 312 - 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. Students who take EET 312 after ECE 214 will only receive credit and grade for EET 312.

General Education Requirements:

Prerequisites: EET 111 or EET 330 and MAT 122 or a 61 or higher on UM Math placement

Course Typically Offered: Fall

Credits: 4

EET 321 - Electro-Mechanical Energy Conversion

Covers three-phase power, power system supply and distribution, magnetic circuits and transformers, synchronous and asynchronous machines and phasor analysis.

General Education Requirements:

Prerequisites: EET112 or ECE 210

Course Typically Offered: Spring

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. Students who take EET 324 after ECE 314 or after ECE 343 will only receive credit and grade for EET 324.

General Education Requirements:

Prerequisites: EET 111 and MAT 127

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

General Education Requirements:

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. Students who take EET 330 after ECE 209 will only receive credit and grade for EET 330.

General Education Requirements:

Prerequisites: PHY 108 or PHY 122 and MAT 116 or MAT 126 and Mechanical Engineering Technology major or permission

Course Typically Offered: Spring

Credits: 3

EET342 - 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.

General Education Requirements:

Prerequisites: EET 241

Course Typically Offered: Spring

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)

General Education Requirements: Together with EET 451 and EET 452', 'this course satisfies the General Education Capstone Experience Requirement.

Prerequisites: EET 241

Corequisites: EET 342

Course Typically Offered: Spring

Credits: 1

EET 394 - Electrical Engineering Technology Practice

Cooperative work experience at full-time employment for at least a ten-week period. Course may be repeated for credit for a total of 9 completions and 27 total credits. (Pass/Fail Grade Only.)

General Education Requirements:

Prerequisites: Junior standing and permission.

Course Typically Offered: Fall, Spring, Summer

Credits: 3

EET 405 - Fundamentals of Engineering: Electrical and Computer

The Fundamentals of Engineering course is designed to provide a basic competence for all topics required of a licensed practicing engineer in the electrical and computer engineering fields. These topics are based on the areas covered in the NCEES Fundamentals of Engineering exam. The goal of this course is to comprehensively review all the topics so that students may approach the Fundamentals of Engineering exam with confidence.

Prerequisites: Junior standing in the EET major or permission

Course Typically Offered: Fall

Credits: 3

EET 414 - Printed Circuit Board Design

This online course will focus on printed circuit board (PCB) technology, layout, and construction. Emphasis is placed on troubleshooting PCBs and the physical realization of electronic circuits. Background topics include PCB manufacturing and assembly (focusing on cutting-edged manufacturing capabilities and designing for pick-and-place auto assembly). Emphasis will also be placed on schematic capture and circuit board layout and advanced layout techniques using Altium Designer (including 8-10 layer design, 3-D PCB design, flex-PCB design, and PCB miniaturization techniques). Students will be required to use Altium Designer to design and layout their own custom circuit board as a final project. There is no textbook and the software is free for University students. EET 414 and EET 514 cannot both be taken for credit.

General Education Requirements:

Prerequisites: ECE 209 or ECE 210 or EET 241 or EET 330, or permission of instructor

Course Typically Offered: Fall and Spring

Credits: 3

EET 415 - Automation and Integration

Introduction to systems integration will cover many aspects of the integration field that an engineer would expect to encounter. This includes basic networking, hardware types, communication standards and protocols, and troubleshooting skills. This course intends to set the groundwork for a student intending on pursuing a controls or integration engineering expertise, or to give valuable background to a professional who will work closely with these experts. Almost every engineering discipline now works closely with smart devices and automated equipment, so these skills are useful to a wide range of professionals. If this course was taken as a topics course in EET 498, it cannot be repeated for credit.

General Education Requirements:

Prerequisites: Junior standing in EET program or permission

Course Typically Offered: Fall

Credits: 3

EET 422 - Power Systems Analysis

Covers three phase, power system modeling and analysis, including per unit. The analysis tools associated with power system operation, maintenance and upgrade will be developed in this course. In addition, real world power systems will be evaluated to determine if there are any concerns. We will also introduce protective devices which help ensure high reliability. Students who take EET 422 after ECE 427 will only receive credit and grade for EET 422.

General Education Requirements:

Prerequisites: EET 321

Course Typically Offered: Fall

Credits: 4

EET 423 - Protective Relay Applications

This course covers the principles and practice of protective relaying applied to power systems. The student will develop an understanding of how interconnected power systems and their components are protected from abnormal events. If this course was taken as a topics course in EET 498, it cannot be repeated for credit.

General Education Requirements:

Prerequisites: EET 321 or Permission

Course Typically Offered: Spring

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: 2

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.

General Education Requirements: Writing Intensive Requirement; Together with EET 350 and EET 451', 'this course satisfies the General Education Capstone Experience Requirement.

Prerequisites: EET 451 or permission.

Course Typically Offered: Spring

Credits: 1

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. EET 460 and EET 560 cannot both be taken for credit.

General Education Requirements: Population and Environment

Prerequisites: PHY 108 or PHY 112 or PHY 122, and MAT 117 or MAT 126

Course Typically Offered: Fall

Credits: 3

EET 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, and the ethics of engineering economic decision making. Also included are personal finance topics as applied to engineering situations and case study.

EET 484 and EET 584 cannot both be taken for credit.

General Education Requirements: Ethics and Social Context and Institutions

Prerequisites: Senior standing in School of Engineering Technology or instructor permission

Course Typically Offered: Fall, Spring and Summer

Credits: 3

EET 486 - 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.

General Education Requirements:

Prerequisites: Sophomore standing

Course Typically Offered: Fall & Summer

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. Course may be repeated for credit for a total of 9 completions and 36 total credits.

General Education Requirements:

Course Typically Offered: Fall, Spring, Summer

Credits: 1-4

English

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 Writing Intensive 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.

General Education Requirements:

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 post secondary 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 Writing Intensive 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: Writing Intensive

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: Western Cultural Tradition and Cultural Diversity and International Perspectives

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.

General Education Requirements:

Prerequisites: ENG 101 is strongly recommended.

Course Typically Offered: Fall & Spring

Credits: 3

ENG 201 - Strategies for Writing Across Contexts

Builds upon ENG 101's introduction to post secondary writing by developing students' facility with a range of strategies for tailoring rhetorical style and tone to a range of academic, transactional, and public genres

General Education Requirements: Writing Intensive

Corequisites: Sophomore Standing and ENG 101.

Course Typically Offered: Fall, Spring, Summer

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: Artistic and Creative Expression and Writing Intensive

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: Artistic and Creative Expression and Writing Intensive

Prerequisites: ENG 101 or equivalent.

Course Typically Offered: Fall and Spring

Credits: 3

ENG 215 - Theories and Practices of Writing

This core course introduces students to theories of writing from the field of Writing Studies, which broadly examines how writing is produced, consumed, and circulated. It provides students with theories and tools to analyze and compose texts effectively in a variety of contexts., including spaces beyond the university (e. g., in employment, internships, volunteer spaces, etc.).

Prerequisites: ENG 101 or equivalent and declared English minor

Course Typically Offered: Fall and Spring

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: Western Cultural Tradition', 'Artistic and Creative Expression and Writing Intensive

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 a total of 9 completions and up to 27 total units.

General Education Requirements:

Prerequisites: 3 hours of English.

Course Typically Offered: Fall, Spring, Summer

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: Western Cultural Tradition', 'Artistic and Creative Expression and Ethics

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: Cultural Diversity and International Perspectives', 'Artistic and Creative Expression and Ethics

Prerequisites: 3 hours of English.

Course Typically Offered: Every Year

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: Ethics

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: Western Cultural Tradition', 'Cultural Diversity and International Perspectives and Ethics

Prerequisites: 3 hours of English.

Course Typically Offered: Spring

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: Western Cultural Tradition', 'Artistic and Creative Expression and Ethics

Prerequisites: 3 hours of English, or permission of instructor.

Course Typically Offered: Spring

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: Western Cultural Tradition', 'Artistic and Creative Expression and Ethics

Prerequisites: 3 hours of English.

Course Typically Offered: Fall

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: Western Cultural Tradition', 'Cultural Diversity and International Perspectives and Ethics

Prerequisites: 3 hours of English.

Course Typically Offered: Fall, Odd 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: Ethics and Artistic and Creative Expression

Prerequisites: 3 hours of English.

Course Typically Offered: Spring, Even Years

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: Western Cultural Tradition', 'Artistic and Creative Expression and Ethics

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: Western Cultural Tradition', 'and Cultural Diversity and International Perspectives

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: Western Cultural Tradition and Writing Intensive

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: Social Context and Institutions and Artistic and Creative Expression

Prerequisites: 3 hours of English.

Course Typically Offered: Spring

Credits: 3

ENG 301 - Seminar in Writing Studies

A writing-intensive seminar that combines substantial reflective practice with an introduction to research and scholarship in literacy and writing studies.

General Education Requirements: Writing Intensive

Prerequisites: ENG 201, ENG 315, or ENG 395.

Course Typically Offered: Fall

Credits: 3

ENG 307 - Writing Fiction

A course on the writing of fiction with a focus on craft, form, and technique.

General Education Requirements: Writing Intensive

Prerequisites: ENG 205

Course Typically Offered: Fall and Spring

Credits: 3

ENG 308 - Writing Poetry

A course in the writing of poetry with a focus on craft, form, and technique.

General Education Requirements: Writing Intensive

Prerequisites: ENG 205

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: Artistic and Creative Expression and Writing Intensive

Prerequisites: ENG 201 or ENG 205 or ENG 206 or ENG 315 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: Writing Intensive

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: Writing Intensive

Prerequisites: ENG 101 or equivalent and junior standing.

Course Typically Offered: Fall, Spring, Summer

Credits: 3

ENG 320 - Technical Communication for Engineering

Technical Communication for Engineering provides theory and extended practice in the major categories of communication used by engineers in professional and academic settings. Students will learn the principles of ethically communicating technical concepts to audiences with varying levels of technical background. Students will produce genres commonly used by engineers, such as memos, analytical reports, and presentations.

General Education Requirements: Writing Intensive and Social Context and Institutions

Prerequisites: MEE or CIE Majors, ENG 101 or equivalent and Sophomore Standing

Course Typically Offered: Fall and Spring

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: Ethics and Writing Intensive

Prerequisites: 6 credits beyond ENG 101 (ENG 170 and ENG 222 recommended) or instructor permission

Course Typically Offered: Spring Even 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 and International Perspectives

Prerequisites: 6 credits beyond ENG 101 (ENG 170 and ENG 222 recommended) or instructor permission

Course Typically Offered: Fall Even 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: Spring Even 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: Spring, Odd 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: Fall, Odd 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: Fall, Even 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: Fall, Odd 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: Western Cultural Tradition

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: Western Cultural Tradition

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: Western Cultural Tradition

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: Western Cultural Tradition

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: Western Cultural Tradition

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.

This course can be taken twice for credit provided that the theme covered is different for a maximum of six credits earned.

General Education Requirements: Western Cultural Tradition

Prerequisites: 6 credits beyond ENG 101 (ENG 170 and ENG 222 recommended) or instructor permission

Course Typically Offered: Fall

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: Western Cultural Tradition

Prerequisites: 6 credits beyond ENG 101 (ENG 170 and ENG 222 recommended) or instructor permission

Course Typically Offered: Spring

Credits: 3

ENG 395 - Writing Center 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: Writing Intensive

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: Writing Intensive

Prerequisites: English Majors with Junior or Senior standing

Course Typically Offered: Spring

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: Writing Intensive

Prerequisites: Permission of instructor.

Course Typically Offered: Variable

Credits: 3

ENG 407 - Advanced Fiction Writing

A fiction workshop at the advanced level. This course may be taken in tandem with ENG 499 to fulfill the English capstone experience. May be repeated once for credit.

General Education Requirements:

Prerequisites: ENG 307

Course Typically Offered: Spring

Credits: 3

ENG 408 - Advanced Poetry Writing

A poetry workshop at the advanced level. This course may be taken in tandem with ENG 499 to fulfill the English capstone experience. May be repeated once for credit.

General Education Requirements:

Prerequisites: ENG 308

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: Writing Intensive

Prerequisites: ENG 317 or permission.

Course Typically Offered: Spring, Odd Years

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: Writing Intensive

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: Writing Intensive

Prerequisites: 6 credits in writing, including ENG 317

Course Typically Offered: Spring, Even Years

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.

General Education Requirements:

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: Ethics and Writing Intensive

Prerequisites: ENG 271 plus 6 hours of 300-level literature courses or instructor permission

Course Typically Offered: Fall, Even Years

Credits: 3

ENG 445 - Genre Seminar

A seminar on genre. May employ a theoretical approach to genre studies and the concept of genre, or examine the thematic and technical developments of one specific literary genre, such as the Gothic American novel. Student research and writing will be emphasized.

General Education Requirements: Writing Intensive

Prerequisites: ENG 271 plus 6 hours of 300-level literature courses or instructor permission

Corequisites: N/A

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: Ethics and Writing Intensive

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: Ethics and the Writing Intensive

Prerequisites: ENG 271 plus 6 hours of 300-level literature courses or instructor permission

Course Typically Offered: Spring, Even Years

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: Writing Intensive

Prerequisites: ENG 271 plus 6 hours of 300-level literature courses or instructor permission

Course Typically Offered: Fall Even Years

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: Writing Intensive

Prerequisites: ENG 271 plus 6 hours of 300-level literature courses or instructor permission

Course Typically Offered: Fall, Odd 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: Writing Intensive and Capstone

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 - English Career Internship

Students pursue internships in workplaces such as businesses, non-profits, and other organizations. Course meetings provide students with faculty mentorship, opportunities to troubleshoot their internship work with peers, and related course content. Topics covered may include diversity/equity/justice in the workplace, social justice in the community, correlation between academic courses and the workplace, and career exploration/preparation. For each topic, strategies for improving workplace communication are also covered. Each student will design their internship in consultation with their host organization and the course instructor such that it meets their specific goals. Internship work will vary, but typically includes activities such as research, ideation, communication, writing, public relations, editing, content development, community organizing, and other related activities.

General Education Requirements: Capstone

Prerequisites: Department Consent

Course Typically Offered: Fall, Spring, Summer

Credits: 3

ENG 497 - Independent Study in English

Advanced study and research in literature and/or theory not covered by other courses.

General Education Requirements:

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: Capstone

Prerequisites: Senior English major and permission of department

Course Typically Offered: Fall, Spring, Summer

Credits: 0

Finance

FIN 257 - Introduction to the Bloomberg Terminal

This course will train students in the use of the Bloomberg terminal software via hands-on application and analysis. Students need not be finance majors. However, given that Bloomberg is a financial tool, students should have some familiarity with, and interest in, finance when taking this course. Some of all of the following topics will be explored at an introductory level via the terminal software: stocks, bonds, charting, fund analysis, economics, supply chain analysis, and Excel integration. Students will also use the software to analyze broader business issues in marketing and management. If this course was taken as a topics course in MGT 290, it cannot be repeated for credit.

General Education Requirements:

Course Typically Offered: Fall and Spring

Credits: 1

FIN 290 - Introduction to Topics in Finance

Introduces students to aspects of the Finance discipline. Special topics may include areas relevant to any aspect of finance at an introductory level. This course may be repeated for credits.

Prerequisites: Business Major or Minor

Course Typically Offered: Variable

Credits: 1-3

FIN 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.

General Education Requirements:

Prerequisites: A grade of C- or better in ACC 201, ECO 120, ECO 121, and in one of the following: MAT 115, MAT 116, or MAT 126; junior standing.

Course Typically Offered: Fall & Spring

Credits: 3

FIN 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: Writing Intensive

Prerequisites: A grade of C- or better in FIN 350 and in STS 215 or STS 232.

Course Typically Offered: Spring and Fall

Credits: 3

FIN 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.

General Education Requirements:

Prerequisites: A grade of C- or better in FIN 350; junior standing.

Course Typically Offered: Fall & Spring

Credits: 3

FIN 353 - Investment Strategy

Examines the construction and management of investment portfolios.

General Education Requirements:

Prerequisites: A grade of C- or better in FIN 350 and STS 215 or STS 232.

Course Typically Offered: Fall & Spring

Credits: 3

FIN 396 - Field Experience/Internship in Finance

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.)

General Education Requirements:

Prerequisites: Business Majors with 2.50 GPA or better; Junior Standing

Course Typically Offered: Fall, Spring, Summer

Credits: 1-6

FIN 454 - Financial Derivatives and Fixed Income

The course is organized around two major financial asset classes: derivatives and fixed income. In the first module, you learn about (1) options and the growing role of financial engineering, (2) futures, swaps, and their use in risk management, and (3) hedge funds known for their extensive derivatives use. In the second module, you study (1) bond pricing and various measures of bond returns, (2) the term structure of interest rates, and (3) fixed income portfolio management.

General Education Requirements:

Prerequisites: A grade of C- or better in FIN 350. Junior Standing.

Course Typically Offered: Spring & Fall

Credits: 3

FIN 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.

General Education Requirements:

Prerequisites: A grade of C- or better in MGT 343, FIN 350.

Course Typically Offered: Fall

Credits: 3

FIN 490 - Special Topics in Finance

Study of various aspects of functional areas of finance. Topics vary depending on faculty and student interests. May be repeated for credit if the topics differ.

General Education Requirements:

Prerequisites: FIN 350 and Junior Standing

Course Typically Offered: Variable

Credits: 1-3

First-Year Experience

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.

General Education Requirements:

Prerequisites: Permission.

Course Typically Offered: Fall & Spring

Credits: 1

Food Science and Nutrition

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: Applications of Scientific Knowledge

Course Typically Offered: Fall, Spring, Summer

Credits: 3

FSN 103 - Science of Food Preparation

An exploration of food and food preparation through the study of the relationship between food structure, composition and nutritive value, and the preparation of food and food products.

General Education Requirements:

Prerequisites: FSN 101

Course Typically Offered: Spring

Credits: 3

FSN 104 - Science of Food Preparation Lab

This lab provides experiential learning to complement topics learned in FSN 103, The Science of Food Preparation. The focus is on basic preparation skills to teach about foods and food preparation, and the relationship between structure, composition, and nutritive value of foods. Course Note: FSN 103 can either be taken concurrently with FSN 104 or as a prerequisite to FSN 104.

General Education Requirements:

Prerequisites: FSN 103, Food Science Major or Human Nutrition or Food Science minor; or permission

Course Typically Offered: Spring

Credits: 1

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: Application of Scientific Knowledge

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

General Education Requirements:

Prerequisites: FSN 101 and MAT 115 or MAT 116 or MAT 122 or MAT 126

Course Typically Offered: Fall

Credits: 3

FSN 230 - Nutritional and Medical Terminology

Fundamentals of vocabulary for nutritionists and other health professionals. Web-based.

General Education Requirements:

Prerequisites: Sophomore Standing

Course Typically Offered: Fall, Spring, Summer

Credits: 1

FSN 235 - Introduction to Sports Nutrition

This class covers nutritional needs, nutritional assessment, and items of interest through the stages of development from the child to the elite athlete. The student will learn about the micronutrient and macronutrient needs and how they affect performance along with learning about disordered eating, vegetarian diets and more. Students will develop an understanding of healthy food choices and nutrition principles across a broad range of athletic abilities and ages. Although the focus of this class is on sports nutrition, the skills learned are transferable to other disciplines.

Prerequisites: FSN 101

Course Typically Offered: Fall

Credits: 3

FSN 236 - Introduction to Food Safety and Food Processing Sanitation

Students will learn basic food safety and sanitation concepts applied to food processing facilities. This course provides students with the knowledge and hands-on skills to create and implement a basic sanitation program for a food processing facility. The course focuses on good manufacturing practices (GMPs) and sanitation standard operating procedures (SSOPs).

Prerequisites: NONE

Course Typically Offered: Spring

Credits: 1

FSN 265 - Application of Nutrition Principles

The course will apply basic nutrition knowledge to food consumption for individuals. The scientific evidence base for dietary guidance from the United States government will be discussed. Students will use dietary guidance to create eating plans to improve human health and prevent disease.

General Education Requirements:

Prerequisites: FSN 101 and BIO 100

Course Typically Offered: Spring

Credits: 3

FSN 270 - World Food and Culture

An investigation of the status of the world food supply, food in the developing world, and food in the developed world, with emphasis on sustainability of food systems, as well as an exploration of food selection and preparation in a cultural context.

General Education Requirements: Cultural Diversity and International Perspectives and Population and the Environment

Prerequisites: Sophomore Standing

Course Typically Offered: Fall

Credits: 3

FSN 290 - Career Pathways in Human Nutrition and Dietetics

This course will focus on exposing students to career options with their degree in Food Science and Human Nutrition and concentration in Human Nutrition and Dietetics. Students will develop knowledge and skills to succeed in pursuing their career choices.

General Education Requirements:

Prerequisites: FSN 101, Human Nutrition and Dietetics concentration or permission, Sophomore standing;

Course Typically Offered: Spring

Credits: 1

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: Writing Intensive Requirement.

Prerequisites: Junior Standing and a grade of C- or better in BMB207 or CHY 121; BIO 208 or BIO 200, and FSN 265.

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.

General Education Requirements:

Prerequisites: FSN 103

Corequisites: 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.

General Education Requirements:

Corequisites: BMB 207 or CHY 121 and BIO 100

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

General Education Requirements:

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.)

General Education Requirements:

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.

General Education Requirements:

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. Course will include field trips during class hours.

General Education Requirements: Capstone

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.

General Education Requirements:

Prerequisites: BIO 208 or BIO 200, and a C- or better in BMB 322 or BMB 360.

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.

General Education Requirements:

Corequisites: FSN 410

Course Typically Offered: Fall

Credits: 3

FSN 415 - Food Safety Systems-Preventive Controls for Human Food

This class provides students with the knowledge and skills necessary to conduct a hazard analysis and create a food safety plan for a food processing facility operating under the Current Good Manufacturing Practice, Hazard Analysis, and Risk-based Preventive Controls for Human Food regulation (referred to as the Preventive Controls for Human Food regulation or PC for short).

Course Note: Students will complete an online module (Part 1) as a prerequisite before classes start and then complete Part 2 in person during the semester. After completing this class, students have the option to be awarded a certificate from the Food Safety Preventive Controls Alliance (FSPCA) and will be a Preventive Controls Qualified Individual (PCQI).

Prerequisites: FSN 236 and Food Safety Preventive Controls Alliance (FSPCA) Preventive Controls for Human Food Blended Online Course.

Course Typically Offered: Spring

Credits: 1

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.

General Education Requirements:

Prerequisites: NUR 303 and a grade of C- or better in FSN 412

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: Writing Intensive

Prerequisites: FSN 330.

Course Typically Offered: Fall

Credits: 1

FSN 430 - Counseling and Diet Therapy

This course covers counseling theory, techniques, and application of the nutrition care process to facilitate behavior change for improved nutrition and health. Students will learn the counseling process, from interviewing and assessment, to nutrition education. Topics also include nutrition counseling for wellness, disease prevention, and medical nutrition therapy.

General Education Requirements:

Prerequisites: FSN 301

Course Typically Offered: Spring

Credits: 3

FSN 436 - Food Laws and Regulations

Examination and discussion of federal, international and state laws and regulations applying to the processing, handling, distribution and serving of food products and dietary supplements.

General Education Requirements: Ethics

Prerequisites: Sophomore Standing

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 a vehicle of infection and intoxication. FSN 438 and FSN 528 cannot both be taken for credit. Lec 3

General Education Requirements:

Prerequisites: BMB 300.

Course Typically Offered: Spring, Odd 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. FSN 439 and FSN 529 cannot both be taken for credit.

General Education Requirements:

Prerequisites: BMB 305 and Food Science Concentration

Corequisites: FSN 438

Course Typically Offered: Spring, Odd 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. FSN 440 and FSN 545 cannot both be taken for credit.

General Education Requirements:

Prerequisites: BIO 100 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.

General Education Requirements:

Prerequisites: BIO 100 or permission.

Course Typically Offered: Spring, Even Years

Credits: 3

FSN 475 - Sensory Evaluation Laboratory

A laboratory that provides training in the selection, design, execution, and analysis of sensory and consumer science experiments. Training in sensory science-specific software and execution of web-based surveys and focus groups. FSN 475 and FSN 575 may not both be taken for credit.

General Education Requirements:

Corequisites: FSN 585

Course Typically Offered: Spring Alternating Years

Credits: 1

FSN 482 - Food Chemistry

Study of the composition, structure, and properties of foods and chemical changes occurring during processing and utilization. Lec 3. FSN 482 and FSN 580 cannot both be taken for credit.

General Education Requirements:

Prerequisites: BMB 322 or BMB 360 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.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: FSN 330 and junior standing within the FSN major, or permission.

Course Typically Offered: Spring, Even 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.

General Education Requirements:

Corequisites: FSN 485.

Course Typically Offered: Spring, Even 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.

General Education Requirements:

Prerequisites: Senior standing and permission.

Course Typically Offered: Fall, Spring, Summer

Credits: Ar

Franco American Studies

FAS 101 - Introduction to the French cultures of North America

Introduces students to the French cultures of the United States, emphasizing the peoples of Maine and the Northeast region. Examines the French cultures of Canada, the French heritage cultures of the Northeast and the new French speaking migrants to Maine. Taught in English; no knowledge of the French language is presumed.

General Education Requirements: Social Context and Institutions and Cultural Diversity and International Perspectives

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: Population and the Environment

Course Typically Offered: Spring

Credits: 3

FAS 140 - Searching for Family Origins: Genealogy, DNA, and Family Trees

Genealogy is the study of family history. It is a global phenomenon, one of the biggest participatory activity on the planet. It informs popular conceptions of the past and of identity. This course explores the implications of genealogy and family history. Students will learn the fundamentals of genealogical research, build a family tree, and think about genealogy as both a field and a personal practice. Students will explore the ethical questions of genealogy, including but not limited to genetics and DNA testing, the impact of technology, and its role in identity.

General Education Requirements: Social Context and Institutions and Ethics

Course Typically Offered: Spring, Alternating years

Credits: 3

FS 170 - Transnational Beat, Jack Kerouac

Jack Kerouac has often been studied as the quintessential American writer. Yet Jack Kerouac was the son of French Canadian immigrants, spoke only French until he was six, wrote an early draft of his famous *On the Road* in French, sprinkled passages in French throughout all his writing and cited French writers as important inspirations. This course will explore the ways in which Kerouac straddle cultures and how this transnationalism infects, determines and interrupts both the content and the style of his writings. We will read excerpts of Kerouac's lesser-known writings, some of his writings in French (in translation) and of course parts of *On the Road*. This class will run as a seminar; no prior knowledge of French is required.

General Education Requirements: Western Cultural Tradition and Cultural Diversity and International Perspectives

Course Typically Offered: Spring

Credits: 3

FAS 200 - SL: 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.

General Education Requirements: Cultural Diversity and International Perspectives and Social Context and Institutions

Course Typically Offered: Fall and Summer

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: Population and the Environment

Course Typically Offered: Fall

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.

General Education Requirements:

Prerequisites: FAS 101 or permission.

Course Typically Offered: Variable

Credits: 3

FAS 400 - Internship in Franco American Studies

This Franco American Studies course provides opportunities for students to complete and reflect upon an internship with archives and archival materials. Students with an interest in cultural heritage preservation, library and information studies, archival science, public history, or Franco American Studies will undertake various duties in the discovery, organization, cataloging, and overall stewardship of Franco American cultural materials for the completion of an internship. In partnership with their internship cohort and instructor, they will use this course to evaluate and reflect upon these duties, the materials they encounter, and the learned skills they can deploy in their professional lives. Specific internship duties will change from semester to semester; the course's structure of evaluation and reflection will not. This internship course is open to all students and requires the completion of tasks in person at one or another UMS campus, at a separate agreed upon location, at a distance, or any combination of these in close consultation with the instructor.

General Education Requirements:

Prerequisites: Any FAS course or permission of the instructor

Course Typically Offered: Spring and Summer

Credits: 1-2

FSN 406 - Nutritional Care of Older Adults

Overview of older adults' nutritional challenges and common food-drug interactions. Students will conduct an environmental scan of a community for nutrition services available to older adults and barriers to obtaining healthful food. Students gain hands-on experience with the Nutrition-Focused Physical Exam, Mini-Mental State Examination, the International Dysphasia Diet Standardization Initiative.

General Education Requirements:

Prerequisites: FSN 301 or permission

Course Typically Offered: Fall and Spring

Credits: 1

French

FRE 101 - Elementary French I

A systematic study of the basics of the French language. Equal emphasis is placed on developing reading, comprehension, speaking and writing skills. For students with no previous study of French or fewer than two years in high school.

General Education Requirements: Cultural Diversity and International Perspectives

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: Cultural Diversity and International Perspectives

Prerequisites: FRE 101 or equivalent.

Course Typically Offered: Spring

Credits: 3 - 4

FRE 201 - Intermediate French I

An integrated approach. Audio-visual materials and reading texts of a literary and/or cultural nature will be employed to strengthen comprehension, reading, writing, and speaking. Includes a systematic but gradual review of the essentials of French grammar.

General Education Requirements: Cultural Diversity and International Perspectives

Prerequisites: FRE 102 or equivalent.

Course Typically Offered: Fall

Credits: 3 - 4

FRE 202 - Intermediate French II

A continuation of FRE 201 using audio-visual materials and reading texts of a literary and/or cultural nature to strengthen comprehension, reading, writing, and speaking. Includes a systematic but gradual review of the essentials of French grammar.

General Education Requirements: Cultural Diversity and International Perspectives

Prerequisites: FRE 201

Course Typically Offered: Spring

Credits: 3 - 4

FRE 305 - French Conversation and Composition: Social Issues

Systematic training in the correct usage of spoken and written French through a broad range of conversational situations and writing topics focusing on social issues.

General Education Requirements: Cultural Diversity and International Perspectives and Writing Intensive

Prerequisites: FRE 202 or any FRE 300 level course or higher or permission

Course Typically Offered: Fall

Credits: 3

FRE 306 - French Conversation and Composition: Global Issues

Systematic training in the correct usage of spoken and written French through a broad range of conversational situations and writing topics focusing on global issues. Continued training in the correct usage of spoken and written French.

General Education Requirements: Cultural Diversity and International Perspectives and Writing Intensive

Prerequisites: FRE 202 or any FRE 300 level course or higher or permission

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: Cultural Diversity and International Perspectives

Prerequisites: FRE 202 or any FRE 300 level course or higher or permission

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: Cultural Diversity and International Perspectives

Prerequisites: FRE 202 or any FRE 300 level course or higher or permission

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: Cultural Diversity and International Perspectives

Prerequisites: FRE 202 or any FRE 300 level course or higher or permission

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: Cultural Diversity and International Perspectives

Prerequisites: Any FRE 300 level or higher course or permission

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.

General Education Requirements:

Prerequisites: FRE 202 or any FRE 300 level course or higher or permission

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: Cultural Diversity and International Perspectives

Prerequisites: 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.

General Education Requirements:

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: Cultural Diversity and International Perspectives

Prerequisites: FRE 202 or permission of instructor

Course Typically Offered: Summer, Odd 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: Cultural Diversity and International Perspectives

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: Cultural Diversity and International Perspectives and Writing Intensive

Prerequisites: FRE 400 or permission.

Course Typically Offered: Spring, Even Years

Credits: 3

FRE 407 - 19th Century French Literature

Readings of major 19th century figures, including Balzac, Sand, Hugo, Flaubert, Zola, and Baudelaire, with particular attention to social and philosophical themes as well as concepts of language and genre.

May be repeated for credit, the course content may vary.

General Education Requirements: Cultural Diversity and International Perspectives

Prerequisites: FRE 309 or FRE 310 or any FRE 400 level or higher course or permission

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: Cultural Diversity and International Perspectives

Prerequisites: FRE 309 or FRE 310 or any FRE 400 level or higher course or permission

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: Cultural Diversity and International Perspectives and Writing Intensive

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: Cultural Diversity and International Perspectives and Artistic and Creative Expression

Prerequisites: FRE 309 or FRE 310 or any FRE 400 level or higher course or permission

Course Typically Offered: Variable

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: 'Western Cultural Tradition', 'Cultural Diversity and International Perspectives and Artistic and Creative Expression

Prerequisites: FRE 309 or FRE 310 or any FRE 400 level or higher course 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: 'Western Cultural Tradition', 'Cultural Diversity and International Perspectives and Artistic and Creative Expression

Prerequisites: FRE 309 or FRE 310 or any FRE 400 level or higher course 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: Cultural Diversity and International Perspectives

Prerequisites: FRE 309 or FRE 310 or any FRE 400 level or higher course 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, and women writers. Topics vary. May be repeated for credit.

General Education Requirements: Cultural Diversity and International Perspectives

Prerequisites: FRE 309 or FRE 310 or any FRE 400 level or higher course 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: Cultural Diversity and International Perspectives, Western Cultural Tradition and Capstone Experience

Prerequisites: Senior standing and permission.

Course Typically Offered: Fall & Spring

Credits: 0-3

FRE 498 - Independent Projects II

No description available.

General Education Requirements: Cultural Diversity and International Perspectives

Course Typically Offered: Spring

Credits: 1-3

General Engineering

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.

General Education Requirements:

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.)

General Education Requirements:

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.

General Education Requirements:

Course Typically Offered: Spring

Credits: 1

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.

General Education Requirements:

Course Typically Offered: Spring

Credits: 3

Geography

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: Cultural Diversity and International Perspectives and Population and the Environment Requirements.

Course Typically Offered: Fall

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: Population and the Environment

Course Typically Offered: Fall

Credits: 3

GEO 265 - The Power of Maps

Humans have been making maps for thousands of years, but never before were maps as present in everyday life as they are today. Just think of the GPS in cars and the locator apps on our phones. It is more important than ever that we understand maps, how they are made, and how they have shaped society, from guiding imperial expansion to influencing urban development, land use, tourism, and surveillance. This course teaches students the history of maps and map-making from the first rock carvings of ancient cities to Google Earth and smart bombs. Major topics will include how maps have been essential tools for government, warfare, territorial control, social and economic planning, and artistic expression. We will explore how map-making technology has changed over time, the drive for increasing accuracy, and how the design of maps reflects the cultures that produce them. Students will also learn how to make their own maps to tell a spatial historical narrative. Most broadly, this course will teach students how to read maps as rich documents that are fascinating windows on the past. If this course was taken under as a topics course in HTY 398, it cannot be repeated for credit.

General Education Requirements: Cultural Diversity and International Perspectives and Artistic and Creative Expressions

Course Typically Offered: Fall

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: Cultural Diversity and International Perspectives and Population and the Environment

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.

General Education Requirements:

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: Western Cultural Tradition and Cultural Diversity and International Perspectives

Course Typically Offered: Variable

Credits: 3

GEO 410 - North American Historical Geography

This seminar examines the various ways historical geographers have studied the North American past, ranging from focused local studies to national and continental interpretations. The readings pay particular attention to the creation of cultural landscapes, environmental change, and the character of places, regions, and countries. The course considers the challenge of representing historical information in the spatial format of the map. The seminar meets weekly. Students are expected to do the readings, contribute to discussion, and participate in the class field trip.

Prerequisites: A course at the 200 level in either Anthropology, Geography, or History; Junior standing; or permission of the instructor

Course Typically Offered: Spring

Credits: 3

German

GER 101 - Elementary German I

The basics of the German language. Emphasis on developing reading, comprehension, speaking and writing skills. For students with no previous study of German or fewer than two years in high school.

General Education Requirements: Cultural Diversity and International Perspectives

Course Typically Offered: Fall

Credits: 3

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: Cultural Diversity and International Perspectives

Prerequisites: GER 101 or equivalent.

Course Typically Offered: Spring

Credits: 3

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: Cultural Diversity and International Perspectives

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: Cultural Diversity and International Perspectives

Prerequisites: GER 203 or equivalent.

Course Typically Offered: Spring

Credits: 3

Hebrew

HBR 101 - Beginning Modern Hebrew

A systematic study of the basics of the Hebrew language. Equal emphasis is placed on developing reading, listening comprehension, speaking and writing skills. For students with minimal or no previous knowledge of Modern Hebrew.

General Education Requirements: Cultural Diversity and International Perspectives

Course Typically Offered: Fall

Credits: 3

HBR 102 - Beginning Modern Hebrew II

Continued study of the basics of the Hebrew language, with equal emphasis on developing reading, listening comprehension, speaking and writing skills. Continued discussion of Hebrew as an expression of Jewish culture in Israel and the United States. For students with one semester study of Hebrew or the equivalent as determined through consultation with the instructor.

General Education Requirements: Cultural Diversity and International Perspectives

Prerequisites: HBR 101 or equivalent

Course Typically Offered: Spring

Credits: 3

History

HTY 103 - Creating America to 1877

Examines interactions of the many peoples who created the United States. Topics include Native Americans, the American Revolution, and Civil War, and how colonization, immigration, gender, race, politics, class, and geography shaped the nation.

General Education Requirements: Western Cultural Tradition and Social Contexts and Institutions

Course Typically Offered: Fall, Spring, Summer

Credits: 3

HTY 104 - United States History Since 1877

A survey of main themes of U.S history from 1877 to the present. The course may include an emphasis on political, social, economic, intellectual, and technological aspects of the Gilded Age, the Progressive Era, WWI, the interwar era, WWII, the Cold War, and post-Cold War era.

General Education Requirements: Western Cultural Tradition and Social Contexts and Institutions

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: Western Cultural Tradition and Social Contexts and Institutions

Course Typically Offered: Variable

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: Western Cultural Tradition and Social Contexts and Institutions

Course Typically Offered: Fall, Spring, Summer

Credits: 3

HTY 107 - East Asian Civilization

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: Social Contexts and Institutions and Cultural Diversity and International Perspectives

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: Cultural Diversity and International Perspectives and Social Contexts and Institutions

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: Western Cultural Tradition and Cultural Diversity and International Perspectives

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: Western Cultural Tradition and Cultural Diversity and International Perspectives

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: Social Contexts and Institutions and Cultural Diversity and International Perspectives

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.

General Education Requirements:

Course Typically Offered: Variable

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.

General Education Requirements:

Course Typically Offered: Variable

Credits: 3

HTY 202 - Medieval Civilization

What were the Middle Ages in the middle of? How did "medieval" become synonymous with "ignorant" and "barbaric"? These questions will be on our minds as we survey European history from the late Roman Empire through the fifteenth century, examining developments in political, religious, and cultural fields. Even as we aspire to cover huge swaths of geography and history, we will also pause to investigate individual case studies and telling details. Eschewing caricature and conventional wisdom, we will explore the many varieties of medieval civilization, emphasizing the complex lessons and legacies that this period offers for the modern world.

General Education Requirements: Cultural Diversity and International Perspectives and Western Cultural Tradition

Course Typically Offered: Fall

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: Western Cultural Tradition and Social Contexts and Institutions

Course Typically Offered: Fall & Summer

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: Western Cultural Tradition

Course Typically Offered: Fall

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: Population and the Environment

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: Western Cultural Tradition and Population and Environment

Course Typically Offered: Variable

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: Western Cultural Tradition and Cultural Diversity and International Perspectives

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: Social Contexts and Institutions and Cultural Diversity and International Perspectives

Course Typically Offered: Spring

Credits: 3

HTY 221 - History and Comics

This course provides a concise introduction to the field of comics studies, and then relies on the comics medium to acquaint students with some of the major topics and themes that are commonly encountered in the discipline of history. Comics are highly accessible and foster active engagement, making it a powerful medium through which to experience the discipline of history. In particular, we will be examining comics as historical documents, but also as a medium for historical analysis. Students will develop the intellectual tools, as they relate to the field of comics studies, required to interpret and criticize the content and meaning of a range of comics materials from the past and present. While it is impossible to cover the whole of the discipline of history, students will be introduced to a wide and varied selection of subject matter, including politics and political discourse, armed conflicts and mass atrocities, nature and the environment, race and ethnicity, Indigenous peoples, labor and the working class, and gender.

General Education Requirements: Western Cultural Tradition and Artistic and Creative Expression

Course Typically Offered: Variable

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'kmaq, 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: Population and Environment and Cultural Diversity and International Perspectives

Course Typically Offered: Variable

Credits: 3

HTY 232 - 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: Western Cultural Tradition and Cultural Diversity and International Perspectives

Course Typically Offered: Variable

Credits: 3

HTY 235 - Heresy, Witchcraft, and Reform

This course will examine the definition and repression of heresy and witchcraft in Europe from late antiquity through the seventeenth century. Focusing on issues surrounding gender, belief, and otherness, we will spend time reading and thinking about the meanings of religious dissent and orthodoxy in premodern contexts. Our investigation will center on the ways in which efforts to reform the Church were closely connected to campaigns against its imagined internal enemies.

General Education Requirements: Western Cultural Tradition and Social Context and Institutions

Course Typically Offered: Variable

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 and International Perspectives and Social Context and Institutions.

Course Typically Offered: Spring

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: Social Contexts and Institutions and Cultural Diversity and International Perspectives

Course Typically Offered: Spring

Credits: 3

HTY 261 - New England and Eastern Canada Since 1815: A Transnational Region

This course examines the historical development of the geographical areas now referred to as New England and Eastern Canada from 1815, the end of the Napoleonic Wars and the War of 1812, the last major Anglo-American conflict, to the present. An emphasis will be placed on exploring New England and Eastern Canada as a transnational region in the making, where there have been more historical similarities than differences in spite of the gradual hardening of borders between countries, states, and provinces. The course will follow a rough chronology, and cover topics such as building borders, political institutions, and identities, economic pursuits like agriculture, forestry, and fishing, sporting cultures, women's suffrage, civil rights, environmental movements, and indigenous resurgences.

General Education Requirements: Population and Environment and Social Context and Institutions

Course Typically Offered: Alternating

Credits: 3

HTY 265 - The Power of Maps

Humans have been making maps for thousands of years, but never before were maps as present in everyday life as they are today. Just think of the GPS in cars and the locator apps on our phones. It is more important than ever that we understand maps, how they are made, and how they have shaped society, from guiding imperial expansion to influencing urban development, land use, tourism, and surveillance. This course teaches students the history of maps and map-making from the first rock carvings of ancient cities to Google Earth and smart bombs. Major topics will include how maps have been essential tools for government, warfare, territorial control, social and economic planning, and artistic expression. We will explore how map-making technology has changed over time, the drive for increasing accuracy, and how the design of maps reflects the cultures that produce them. Students will also learn how to make their own maps to tell a spatial historical narrative. Most broadly, this course will teach students how to read maps as rich documents that are fascinating windows on the past. If this course was taken under as a topics course in HTY 398, it cannot be repeated for credit.

General Education Requirements: Cultural Diversity and International Perspectives and Artistic and Creative Expressions

Course Typically Offered: Fall

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: Cultural Diversity and International Perspectives and Population and the Environment

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: Western Cultural Tradition and Social Contexts and Institutions

Course Typically Offered: Variable

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: Western Cultural Tradition

Course Typically Offered: Fall, Even Years

Credits: 3

HTY 281 - Military History of Modern Asia

The course explores the origins and historical developments in the military and strategic history of the Asia Pacific region. Students will begin by examining the regional strategic situation that existed in the aftermath of World War II in East Asia. Students will then move on to consider the origins of the Cold war in East Asia, the Chinese and Japanese Grand Strategy, and the modern history of the divided Korean nation. Students will also discuss the partition of British India in 1947 and the making of two countries (India and Pakistan), the historical rivalry between India and Pakistan, overt nuclearization in South Asia as well as evolving forces of nationalism and religious extremism in this region. Students will also concentrate on the transformations of Indian democracy, and the rise and fall of dictatorships in Pakistan. Students will be exposed to a wide variety of historical materials, including recently published historical works in history and strategic studies, as well as films and documentaries to frame and understand Asia Pacific history.

General Education Requirements: Cultural Diversity and International Perspectives

Course Typically Offered: Alternating years

Credits: 3

HTY 310 - Slavery, Politics, and Memory in American History

This course follows a chronological path through the rise and development of African slavery in colonial North America, the impact of the Revolution on systems of bondage and ideas about freedom, the development of these ideas in the antebellum United States, antislavery and proslavery movements, the coming of emancipation during the Civil War, and the legacy of slavery and redefinition of freedom during Reconstruction. It also focuses on how this history has been remembered, commemorated, erased, and distorted to serve various present-day concerns.

General Education Requirements: Cultural Diversity and International Perspectives, Ethics

Prerequisites: Three credits of History or permission of instructor.

Course Typically Offered: Alternating

Credits: 3

HTY 311 - Research Seminar

A writing intensive seminar that introduces students to the historiography and methodology of important themes in history. Its topics vary. This is a required seminar for all History majors as preparation for the Senior Seminar. Utilizing secondary and selected primary sources students will consider how historians construct different interpretative narratives of past events.

General Education Requirements: Writing Intensive

Prerequisites: Three credits of History or permission of instructor.

Course Typically Offered: Fall and Spring

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 Tradition and Cultural Diversity and International Perspectives

Prerequisites: Three credits of History or permission of instructor.

Course Typically Offered: Fall

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: Western Cultural Tradition

Prerequisites: Three credits of History or permission of instructor.

Course Typically Offered: Variable

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: Cultural Diversity and International Perspectives and Social Contexts and Institutions

Prerequisites: Three credits of History or permission of instructor.

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: Western Cultural Tradition and Cultural Diversity and International Perspectives

Prerequisites: Three credits of History or permission of instructor.

Course Typically Offered: Variable

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.

General Education Requirements:

Prerequisites: Three credits of History or permission of instructor.

Course Typically Offered: Variable

Credits: 3

HTY 365 - The American Immigrant Experience

Writing Intensive course that examines the many kinds of immigrant experiences in the American colonies and the United States from 1600 to the present day, drawing on first-person accounts and historians' interpretations. Considers the influence of age, sex, legal status, race, religion, occupation, and class, as well as whether immigrants came voluntarily, as free persons, or by force, as slave labor.

General Education Requirements: Writing Intensive and Population & Environment

Prerequisites: Three credits of History or permission of instructor.

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.

General Education Requirements:

Prerequisites: Three credits of History or permission.

Course Typically Offered: Fall, Spring, Summer

Credits: 1-3

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".

General Education Requirements:

Prerequisites: Three credits of History or permission of instructor.

Course Typically Offered: Variable

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: Western Cultural Tradition and Cultural Diversity and International Perspectives

Prerequisites: Three credits of History 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: Western Cultural Tradition and Population and the Environment

Prerequisites: Three credits of History or permission.

Course Typically Offered: Variable

Credits: 3

HTY 405 - Early Modern Europe: The Age of Reform

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 homogeneous 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: Cultural Diversity and International Perspectives', 'Western Cultural Tradition and Writing Intensive

Prerequisites: Three Credits of History or permission.

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: Western Cultural Tradition

Prerequisites: Three credits of History or permission.

Corequisites: Not Regularly Offered

Course Typically Offered: Fall

Credits: 3

HTY 409 - European Society and Culture in the Age of Total War

Europe in the age of the two world wars, focusing on the causes and consequences of the wars themselves, concurrent political and social problems, and the intellectual and cultural contexts.

General Education Requirements: Western Cultural Tradition

Prerequisites: Three credits of History or permission of instructor.

Course Typically Offered: Not Regularly Offered

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: Western Cultural Tradition and the Cultural Diversity and International Perspectives

Prerequisites: Three Credits of History or permission.

Course Typically Offered: Fall

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.

General Education Requirements:

Prerequisites: Three credits in History or instructor permission.

Course Typically Offered: Not Regularly Offered

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: Western Cultural Tradition

Prerequisites: Three Credits of History or permission.

Course Typically Offered: Variable

Credits: 3

HTY 427 - Vikings!

Marauding barbarians with a lust for blood and plunder, the Vikings retain their grip on the popular imagination. To what extent are our images of the medieval Norse grounded in historical reality? This course will begin by asking what archaeological finds, runestones, skaldic poetry, and foreign chroniclers can tell us about the people of Viking Age Scandinavia. We will then explore how different societies and cultural groups have shaped and reshaped images of the Vikings to suit different agendas. Our investigation will range from thirteenth-century Iceland, where medieval Christian writers composed vernacular sagas about pagan heroes, to contemporary America, where Viking imagery appears on everything from football helmets to comic books.

General Education Requirements: Western Cultural Tradition and Cultural Diversity and International Perspectives.

Prerequisites: Three credits 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.

General Education Requirements:

Prerequisites: Three credits of History 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: Cultural Diversity and International Perspectives and Social Contexts and Institutions Requirements.

Prerequisites: Three credits 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: Cultural Diversity and International Perspectives and Social Contexts and Institutions

Prerequisites: Three credits of History or permission.

Course Typically Offered: Variable

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: Cultural Diversity and International Perspectives

Prerequisites: Three credits of History or permission.

Course Typically Offered: Variable

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: Social Contexts and Institutions and Cultural Diversity and International Perspectives

Prerequisites: Three credits of History 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: Western Cultural Tradition and Cultural Diversity and International Perspectives

Prerequisites: Three credits of History or permission.

Course Typically Offered: Not Regularly Offered

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: Western Cultural Tradition

Prerequisites: Three credits of History or permission.

Course Typically Offered: Not Regularly Offered

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.)

General Education Requirements:

Prerequisites: Three credits of History 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: Cultural Diversity and International Perspectives and Ethics

Prerequisites: Three credits of History 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: Western Cultural Tradition and Writing Intensive

Prerequisites: Three credits of History 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: Western Cultural Tradition and Social Contexts and Institutions

Prerequisites: Three credits of History or permission.

Course Typically Offered: Variable

Credits: 3

HTY 463 - The Early Republic, 1789-1840

Explores the shaping of American society by people and events between the years 1789-1840. While paying due attention to political and economic changes during this period, the focus will be on the lives and experiences of ordinary people: their families, work, homelife, communities, attitudes and expectations.

General Education Requirements: Western Cultural Tradition', 'Social Contexts/Institutions and Cultural Diversity/International Perspectives Requirements.

Prerequisites: Three credits in History or instructor 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: Western Cultural Tradition

Prerequisites: Three credits of History or permission.

Course Typically Offered: Not Regularly Offered

Credits: 3

HTY 465 - American Landscapes

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: Population and Environment

Prerequisites: Three credits of History 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: Western Cultural Tradition

Prerequisites: Three credits of History 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: Western Cultural Tradition

Prerequisites: Three credits of History or permission.

Course Typically Offered: Variable

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: Social Contexts and Institutions and Cultural Diversity and International Perspectives

Prerequisites: Three credits of History or permission.

Course Typically Offered: Variable

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: Social Contexts and Institutions and Cultural Diversity and International Perspectives

Prerequisites: Three credits of History or permission.

Course Typically Offered: Variable

Credits: 3

HTY 475 - History of Modern Warfare

The course explores the historical developments in the evolution of modern warfare and military thought over the last two centuries. Students will begin by examining the theoretical writings of classical military theorists and different outstanding historical cases of military innovation in modern warfare. Later, students will consider many topical segments from literature and films of major wars and will also examine the changing nature of war by analyzing new war-fighting domains such as cyberwar and space as the final frontier. In this class, students will be engaged in activities designed to improve your reading, writing, and presentation skills. Students will also be provided an opportunity to study these materials in-depth and will be encouraged to conduct research on your own. By the end of the course, students will be able to analyze the evolution of modern war across the different military domains over the last two centuries.

General Education Requirements: Cultural Diversity and International Perspectives

Course Typically Offered: Alternating Years

Credits: 3

HTY 476 - History of Modern Terrorism

This course focuses on the historical study of terrorism and political violence. Students will discuss the difference between state terror and terrorism perpetrated by non-state actors; however, the majority of the course material will focus on terrorism by the latter. The course offers a case study approach to the history of political violence from antiquity to the modern Islamic Jihad of the twentieth century. Each week students will explore the challenges and problems associated with conceptualizing terrorism through focusing on primary sources concerning key moments in the development of terrorism in a variety of historical contexts. Students will be exposed to a wide variety of political science and historical works such as Nechaev's revolutionary catechism and classic writings on terrorism by Robespierre, Trotsky, and Qutb. In doing so, students will be provided with an opportunity to study the history of political violence in-depth and will be encouraged to conduct research on our own. The course begins with the study of "Terror Tyrannicide in the Ancient World" followed by the "French Revolution" then moving on to "Globalization of Islamic Jihad" in the late-twentieth century. Throughout the course, students will discuss both historical and social science approaches to the topic of terrorism, its political uses, and reflect on how it has been represented in media and literature.

General Education Requirements: Cultural Diversity and International Perspectives

Course Typically Offered: Alternating Years

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: Western Cultural Tradition', 'Cultural Diversity and International Perspectives

Prerequisites: Three credits of History or permission.

Course Typically Offered: Variable

Credits: 3

HTY 480 - Global Environmental History

Environmental history is the study of past interactions between humans and nature, and this course examines environmental historical processes on the global scale by comparing and contrasting on the local, regional, and national scales over time. While it is impossible to cover the environmental history of the whole globe, in-depth explorations of seven major themes, including agriculture and settlement, biological exchanges, and urbanization and industrialization, will thoroughly introduce students to the subfield of global environmental history. Students will also have the opportunity to analyze at length specific environmental historical subject matter and improve their digital literacy through group website projects.

General Education Requirements: Population and Environment and Cultural Diversity and International Perspectives

Prerequisites: Three credits in History or instructor permission.

Course Typically Offered: Variable

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.

General Education Requirements:

Prerequisites: Three credits of History or permission.

Course Typically Offered: Variable

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.

General Education Requirements: Writing Intensive and Capstone

Prerequisites: Restricted to history majors with senior standing.

Course Typically Offered: Fall & Spring

Credits: 3

Honors

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.)

Prerequisites: Enrollment in the Honors College

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.)

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.)

Prerequisites: Enrollment in the Honors College

Course Typically Offered: Spring

Credits: 4

HON 150 - Phage Genome Discovery I

This inquiry-driven research course provides a hands-on laboratory experience in which students isolate a novel bacteriophage from the environment and characterized the bacteriophage through experimentation. Topics covered include phage biology and bacteriology, gene structure and expression, DNA isolation, restriction digest analysis, agarose gel electrophoresis, and electron microscopy. In this writing intensive course, students will learn effective scientific writing skills through instruction and writing activities and will write a final manuscript to report their research findings. Students also carry out activities and reflective writing assignments that simultaneously teach students both scientific content as well as personal, interpersonal, and critical-thinking skills essential to the practice of science. (HON 150 and BMB 150 are identical courses.)

General Education Requirements: Writing Intensive

Prerequisites: Permission

Course Typically Offered: Fall

Credits: 4

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)

General Education Requirements:

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: Social Contexts and Institutions

Prerequisites: Enrollment in the Honors College or permission.

Course Typically Offered: Fall & Spring

Credits: 1

HON 175 - SL: Community Building and Engagement

This course explores the nature of community and community engagement in relation to civic identity, responsibility, and social connectedness. Students will spend time in a sustainable island community off the coast of Rockland, Maine, and learn what it means to be part of such a society. During the semester, students plan and carry out service learning projects working with community partners. They reflect what it means to be part of a community through readings and participation in the community projects at times to be determined.

General Education Requirements: Social Context and Institutions

Prerequisites: Departmental Consent Required

Course Typically Offered: Fall

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: Artistic and Creative Expression

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.

General Education Requirements:

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.

General Education Requirements:

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: Writing Intensive

Prerequisites: Enrollment in the Honors College

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: Writing Intensive

Prerequisites: Enrollment in the Honors College

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.

General Education Requirements:

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: Ethics

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.

General Education Requirements: Artistic and Creative Expression

Prerequisites: Enrollment in the Honors College

Course Typically Offered: Fall

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.)

General Education Requirements:

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.

General Education Requirements:

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.)

General Education Requirements:

Prerequisites: Enrolled in the Honors College and Completion of the Civilizations Sequence (HON 111-212) or by permission.

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.

General Education Requirements:

Prerequisites: Enrollment in the Honors College

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.

General Education Requirements:

Prerequisites: Enrollment in the Honors College

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.

General Education Requirements:

Prerequisites: Enrollment in the Honors College

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.

General Education Requirements:

Course Typically Offered: Not Regularly Offered

Credits: 1-3

HON 498 - Honors Thesis/Research I

Tutorially directed research for the senior thesis or project. Required of all four-year students graduating with a degree with Honors.

General Education Requirements:

Prerequisites: Enrollment in the Honors College and HON 391

Course Typically Offered: Fall, Spring, and occasionally in Summer

Credits: 3

HON 499 - Honors Thesis/Research II

The completion of the senior project begun in HON 498. Required of all four-year students graduating with a degree with Honors.

General Education Requirements: Writing Intensive

Prerequisites: Enrollment in the Honors College and HON 498

Course Typically Offered: Fall, Spring, and occasionally in Summer

Credits: 3

Human Technology Interfaces

HCI 395 - Human Computer Interaction Internship

Experiential learning and opportunities to work on research projects is a key foundation to studying Human Computer Interaction. In collaboration with and with the permission of the professor, undergraduate students may engage in designated or independent project work on any number of research projects sponsored by faculty. Students must complete an Independent Study Proposal, negotiate the number of unites to be earned, complete a contract, and present a tangible deliverable. The Undergraduate Program Advisors signature is required for HCI undergraduate-level Independent Study courses. Through a substantial team project, students apply classroom knowledge in analysis and evaluation, implementation and design, and develop skills working in multidisciplinary teams. Students will work a qualified Lab, Department, or Company for university-based research or external clients to participate in an area of research, design, development and evaluation of assigned projects.

General Education Requirements:

Prerequisites: Departmental Permission.

Course Typically Offered: Variable

Credits: 1-3

HTI 490 - Capstone Preparation

A customized course for preparation and development of the capstone project for the major in Interdisciplinary Studies in Multimodal Interaction. HTI 490 may be taken for a maximum of 9 credits. Capstone project completion occurs in HTI 499. HTI 490 (I) involves development of the capstone project, immersion in the literature of the topic being studied (including a literature review), and creation of a project abstract and proposal. HTI 490 (II) involves design and modeling of the student's project. The focus is on the early stages of project work and development. HTI 490 (III) is intended as advanced research and development of the student's project, and its focus is on the later stages of project work, data acquisition, programming, evaluation of work products, and the like. HTI 499 is devoted to documenting in a white paper or draft manuscript suitable for submission for publication the results of the student's project.

Course Note: To satisfy the Capstone Experience for the Interdisciplinary Studies in Multimodal Interaction major, students must complete 9 credits of HTI 490 and 6 credits of HTI 499.

General Education Requirements: Capstone

Prerequisites: Students accepted into the major in the Interdisciplinary Studies in Multimodal Interaction.

Course Typically Offered: Fall and Spring

Credits: 3-6

HTI 495 - Work Experience

This course focuses on work in a laboratory, business, or other approved organization, where the work undertaken involves hands-on, direct experiential learning. Students learn and practice professional skills that help integrate their experience in the VEMI Lab with their program of study. Student also enhance their skills in collaboration and teamwork. Along with their capstone experience, work experience becomes part of the required portfolio of their work in the major.

Prerequisites: Interdisciplinary Studies in Multimodal Interaction major and permission

Course Typically Offered: Fall and Spring

Credits: 3-6

HTI 499 - Capstone in Interdisciplinary Studies in Multimodal Interaction

The final phase of the capstone sequence, in which students conclude their extended research project, as developed in HTI 490, related to their individualized programs of study in the College of Liberal Arts and Sciences' Bachelor of Arts in Interdisciplinary Studies in Multimodal Interaction. The final project is presented in a public presentation.

Course Note: To satisfy the Capstone Experience for the Interdisciplinary Studies in Multimodal Interaction major, students must complete 9 credits of HTI 490 and 6 credits of HTI 499.

General Education Requirements: Capstone, Writing Intensive

Prerequisites: Permission and 9 credits of HTI 490

Course Typically Offered: Fall and Spring

Credits: 3-6

Innovations

INV 101 - Exploring Innovation

This course is designed for students who are interested in finding out more about innovation, especially as it relates to startup businesses. The course will introduce ways of stimulating creativity, emphasize working in diverse teams and problem-solving to increase speed and decrease risk when it comes to innovation and new business opportunities. Students will 1) learn what is innovation and how to use a simple metric to identify innovation, 2) see/hear about applications of innovation in a variety of fields, 3) learn how to make smart decisions for investing in innovation.

General Education Requirements:

Prerequisites: Permission

Course Typically Offered: Fall, Odd Years

Credits: 1

INV 121 - Fundamentals of Innovation

Regardless of one's field of study, students need to be able to identify problems and generate solutions, communicate these solutions effectively, and test and implement them successfully. In this course, you will use the Innovation Engineering process and system, that incorporates skills and teaches students how to rapidly innovate and solve everyday problems. This course is designed to provide a complete overview of the Innovation Engineering system.

General Education Requirements: Artistic & Creative Expressions and Social Context & Institutions requirements.

Course Typically Offered: Fall & Spring

Credits: 3

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: Social Contexts and Institutions

Prerequisites: INV 121

Course Typically Offered: Variable

Credits: 3

INV 282 - Advanced Innovation Skills

This course will provide students with advanced skills in innovation and a systematic approach to creativity, communication, bringing their idea to reality (commercialization) and systems thinking. In the first set of advanced skills (create), students are provided with 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. The second set of skills (communicate), combines elements of several disciplines: the clarity of professional writing, the precision of technical writing, and the expressiveness of creative writing. The third set (commercialize), 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 of experiments for evaluating ideas and making them real. The fourth set of skills (Systems), students will learn how visually map the system, measure variation, and analyze system.

General Education Requirements: Writing Intensive and Quantitative Literacy

Prerequisites: INV 121

Course Typically Offered: Fall & Spring

Credits: 4

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: Social Contexts and Institutions and Quantitative Literacy

Prerequisites: INV 180

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.

General Education Requirements:

Prerequisites: INV 180 and INV 282 and INV 392

Course Typically Offered: Spring

Credits: 3

INV 405 - Innovation Leadership

Students will learn how to apply the tools and strategies learned in earlier courses into a more advanced 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. Students will then apply concepts explored in Innovation Engineering 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 and testing idea using iterative cycles to help ensure success of the idea.

General Education Requirements: Social Contexts and Institutions

Prerequisites: INV 121 and INV 282

Course Typically Offered: Fall & Spring

Credits: 4

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)

General Education Requirements:

Prerequisites: INV 405 or 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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: Permission.

Course Typically Offered: Variable

Credits: 1-3

Intensive English Institute

IEI 27 - Travel Writing

The Travel Writing course is designed for visiting Exchange Students only. It provides an opportunity for students to visit various Maine locations over the course of a semester while also learning the art of travel writing. The class meets once a week for fifty minutes and the trips to Maine locations are offered every other week.

General Education Requirements:

Prerequisites: Instructor permission required.

Course Typically Offered: Fall, Spring

Credits: 0

IEI 50 - Introductory English: Listening and Speaking

IEI 50 and IEI 51, which are taken together, are normally the first in a series of course modules designed to provide non-native English-speaking students with the necessary linguistic foundation to successfully transition to a university-level curriculum. The focus of the IEI program is primarily on academic language use, and includes the development of listening, speaking, reading and writing skills. Students are initially placed in courses in the IEI program based on the English language proficiency tests given by the IEI. In order to transfer to non-conditional status at the University of Maine, the student must complete the full sequence of courses from the initial course in which s/he is placed.

General Education Requirements:

Prerequisites: Permission required.

Course Typically Offered: Summer

Credits: 0

IEI 51 - Introductory English: Reading and Writing

IEI 50 and IEI 51, which are taken together, are normally the first in a series of course modules designed to provide non-native English-speaking students with the necessary linguistic foundation to successfully transition to a university-level curriculum. The focus of the IEI program is primarily on academic language use, and includes the development of listening, speaking, reading and writing skills. Students are initially placed in courses in the IEI program based on the English language proficiency tests given by the IEI. In order to transfer to non-conditional status at the University of Maine, the student must complete the full sequence of courses from the initial course in which s/he is placed.

General Education Requirements:

Prerequisites: Permission required.

Corequisites: IEI 50

Course Typically Offered: Summer

Credits: 0

IEI 53 - Community English for Speaking and Listening Level 1

This A2 listening and speaking course focuses on helping students speak and understand the English language better- with a focus on acclimating to US culture. Students will practice informal conversation and "small talk," and learn new vocabulary, slang, and idioms. Students will read and discuss current events and news stories, role play everyday conversations, and present short discussions and speeches. Emphasis is placed on oral production in conversation and short presentations and listening comprehension strategies and skills.

Prerequisites: IEI Placement Testing; Department Consent

Course Typically Offered: Variable

Credits: 0

IEI 54 - Community English for Speaking and Listening 2

This B1 listening and speaking course focuses on helping students speak and understand the English language better- with a focus on acclimating to US culture. Students will practice informal conversation and "small talk," and learn new vocabulary, slang, and idioms. Students will read and discuss current events and news stories, role play everyday conversations, and present short discussions and speeches. Emphasis is placed on oral production in conversation and short presentations and listening comprehension strategies and skills.

Prerequisites: IEI Placement test; Department Consent

Course Typically Offered: Variable

Credits: 0

IEI 55 - Community English for Speaking and Listening 3

This B2 listening and speaking course focuses on helping students speak and understand the English language better- with a focus on acclimating to US culture. Students will practice informal conversation and "small talk", and learn new vocabulary, slang, and idioms. Students will read and discuss current events and news stories, role play everyday conversations, and present short discussions and speeches. Emphasis is placed on oral production in conversation and short presentations and listening comprehension strategies and skills.

Prerequisites: IEI Placement Testing; Department Consent

Course Typically Offered: Variable

Credits: 0

IEI 56 - Community English for Speaking and Listening 4

This C1 listening and speaking course focuses on helping students professionalize and level up their English oral communication skills. Students will practice formal and informal conversation and learn new vocabulary. Students will read and discuss current events and news stories, group discussions and present short speeches. Emphasis is placed on oral production in conversation and short presentations and listening comprehension strategies and skills.

Prerequisites: IEI Placement Testing; Department Consent

Course Typically Offered: Variable

Credits: 0

IEI 57 - Career Strategies and Skills

This competency-based, multi-level course is for students who want to improve their English to meet career goals. Classes focus on building communication skills and improving listening, speaking and writing proficiencies. Students explore career options, set career goals, and devise strategies for reaching these goals by identifying what they are good at; understanding how their skills, talents, and interests translate into work; and finding the education and training they need to work in the U.S. Students will prepare job application materials, practice interviewing and negotiating skills, and learn intercultural communication strategies related to U.S. workplace culture.

Prerequisites: Permission Required

Course Typically Offered: Fall and Spring

Credits: 0

IEI 59 - University Culture and Ongoing Orientation

This multi-level course will introduce students to the academic expectations, resources, policies and traditions of university life in the US and serve as an ongoing orientation to the University of Maine. The course is designed to help new international students adjust to college life, establish skills that will help them be successful through their transition into their academic program and develop a sense of belonging and engagement

Course may be repeated as topics will vary depending on need.

Prerequisites: Permission Required

Course Typically Offered: Fall, Spring, Summer

Credits: 0

IEI 60 - Oral Communication Skills 1

This A2 level course helps students develop the English speaking and listening skills needed in the US by focusing on functional communication, vocabulary development, and pronunciation.

General Education Requirements:

Prerequisites: Permission Required

Course Typically Offered: Fall and spring

Credits: 0

IEI 61 - Elementary Academic Writing in English

IEI 60 and IEI 61, which are taken together, are normally the first in a series of course modules designed to provide non-native English-speaking students with the necessary linguistic foundation to successfully transition to a university-level curriculum. The focus of the IEI program is primarily on academic language use, and includes the development of listening, speaking, reading and writing skills. Students are initially placed in courses in the IEI program based on the English language proficiency tests given by the IEI. In order to transfer to non-conditional status at the University of Maine, the student must complete the full sequence of courses from the initial course in which s/he is placed.

General Education Requirements:

Prerequisites: IEI 50 and IEI 51 and permission required.

Corequisites: IEI 60

Course Typically Offered: Fall and Spring

Credits: 0

IEI 62 - Academic Oral Communication 1

This A2 level course prepares students for college classes and meeting career goals by developing their listening, speaking, critical thinking, and pronunciation skills.

Prerequisites: Permission Required

Course Typically Offered: Fall and Spring

Credits: 0

IEI 63 - English Grammar Structure 1

This A2 level course provides leveled discrete grammar review, practice, and synthesis in standard English reading, writing, listening, and speaking skills.

Prerequisites: Permission Required

Course Typically Offered: Fall and Spring

Credits: 0

IEI 64 - Writing Fluently and Accurately

This writing course is designed to provide A2 level students with intensive writing practice to improve fluency and command of written English structure and to build knowledge of sentence level grammar

Prerequisites: Permission Required

Course Typically Offered: Fall, Spring, Summer

Credits: 0

IEI 70 - Oral Communication Skills 2

This B1 level course helps students develop the English speaking and listening skills needed in the US by focusing on functional communication, vocabulary development, and pronunciation.

General Education Requirements:

Prerequisites: IEI 60 and IEI 61 and permission required.

Course Typically Offered: Fall and Spring

Credits: 0

IEI 71 - Intermediate Academic Writing in English

IEI 70 and IEI 71, which are taken together, are normally the second in a series of course modules designed to provide non-native English-speaking students with the necessary linguistic foundation to successfully transition to a university-level curriculum. The focus of the IEI program is primarily on academic language use, and includes the development of listening, speaking, reading and writing skills. Students are initially placed in courses in the IEI program based on the English language proficiency tests given by the IEI.

General Education Requirements:

Prerequisites: IEI 60 and IEI 61 and permission required.

Corequisites: IEI 70

Course Typically Offered: Fall and Spring

Credits: 0

IEI 72 - Academic Oral Communication 2

This B1 level course prepares students for college classes and meeting career goals by developing their listening, speaking, critical thinking, and pronunciation skills.

Prerequisites: Permission Required

Course Typically Offered: Fall and Spring

Credits: 0

IEI 73 - English Grammar Structure 2

This B1 level course provides leveled discrete grammar review, practice, and synthesis in standard English reading, writing, listening, and speaking skills.

Prerequisites: Permission Required

Credits: 0

IEI 74 - Writing Fluently and Accurately 2

This B1 level writing course is designed to provide students with intensive writing practice to improve fluency and command of written English structure.

Prerequisites: Permission Required

Course Typically Offered: Fall, Spring, Summer

Credits: 0

IEI 80 - Oral Communications Skills 3

This B2 level course helps students develop the English speaking and listening skills needed in the US by focusing on functional communication, vocabulary development, and pronunciation.

General Education Requirements:

Prerequisites: IEI 70 and IEI 71 and permission required.

Course Typically Offered: Fall and Spring

Credits: 0

IEI 81 - Advanced Academic Writing in English

IEI 80 and IEI 81, which are taken together, are normally the third in a series of course modules designed to provide non-native English-speaking students with the necessary linguistic foundation to successfully transition to a university-level curriculum. The focus of the IEI program is primarily on academic language use, and includes the development of listening, speaking, reading and writing skills. Students are initially placed in courses in the IEI program based on the English language proficiency tests given by the IEI. In order to transfer to non-conditional status at the University of Maine, the student must complete the full sequence of courses from the initial course in which s/he is placed.

General Education Requirements:

Prerequisites: IEI 70 and IEI 71 and permission required.

Corequisites: IEI 80

Course Typically Offered: Fall and Spring

Credits: 0

IEI 82 - Academic Oral Communication 3

This B2 level course prepares students for college classes and meeting career goals by developing their listening, speaking, critical thinking, and pronunciation skills.

Prerequisites: Permission Required

Course Typically Offered: Fall and Spring

Credits: 0

IEI 83 - English Grammar Structure 3

This B2 level course provides leveled discrete grammar review, practice, and synthesis in standard English reading, writing, listening, and speaking skills

Prerequisites: Permission Required

Course Typically Offered: Fall and Spring

Credits: 0

IEI 84 - Writing Fluently and Accurately 3

This B3 level writing course is designed to provide students with intensive writing practice to improve fluency and command of written English structure.

Prerequisites: Permission Required

Course Typically Offered: Fall, Spring, Summer

Credits: 0

IEI 90 - Oral Communication Skills 4

This C1 level course helps students develop the English speaking and listening skills needed in the US by focusing on functional communication, vocabulary development, and pronunciation.

General Education Requirements:

Prerequisites: IEI 80 and IEI 81 and permission required.

Course Typically Offered: Fall and Spring

Credits: 0

IEI 91 - Advanced English B: Reading and Writing

IEI 90 and IEI 91, which are taken together, are normally the fourth in a series of course modules designed to provide non-native English-speaking students with the necessary linguistic foundation to successfully transition to a university-level curriculum. The focus of the IEI program is primarily on academic language use, and includes the development of listening, speaking, reading and writing skills. Students are initially placed in courses in the IEI program based on the English language proficiency tests given by the IEI. In order to transfer to non-conditional status at the University of Maine, the student must complete the full sequence of courses from the initial course in which s/he is placed.

General Education Requirements:

Prerequisites: IEI 80 and IEI 81 and permission required.

Corequisites: IEI 90

Course Typically Offered: Fall and Spring

Credits: 0

IEI 92 - Academic Oral Communication 4

This C1 level course prepares students for college classes and meeting career goals by developing their listening, speaking, critical thinking, and pronunciation skills.

Prerequisites: Permission Required

Course Typically Offered: Fall and Spring

Credits: 0

IEI 93 - English Grammar Structure 4

This C1 level course provides leveled discrete grammar review, practice, and synthesis in standard English reading, writing, listening, and speaking skills.

Prerequisites: Permission Required

Course Typically Offered: Fall and Spring

Credits: 0

IEI 94 - Writing Fluently and Accurately 4

This C1 level writing course is designed to provide students with intensive writing practice to improve fluency and command of written English structure.

Prerequisites: Permission Required

Course Typically Offered: Fall, Spring, Summer

Credits: 0

IEI 99 - English Composition and Grammar

This course is for graduate students who are non-native English speakers. Students will read and analyze the content, structure, and style of a wide range of academic and professional writing in order to improve their own essays, articles, reports, theses, critiques, and proposals using those features. They will learn to explain, support, compare and argue their ideas effectively through attention to organization, vocabulary, and style. Grammar will be infused into the course as it applies to revision and editing of written work and consistency within various types of writing. Students will use a variety of strategies to improve skills in idea development, organization, word choice, sentence fluency, voice, grammar and mechanics. Writing tasks will be integrated with content, vocabulary, and grammar from various texts.

Prerequisites: Department consent; referral from Grad School

Course Typically Offered: Variable

Credits: 0

Interdisciplinary

INT 107 - Career Exploration in Health Professions

Students will explore career opportunities within the healthcare industry through course lectures, presentations from health professionals, assigned readings, as well as individual and team projects. This course will provide students with an understanding of the history, ethics, personal commitment, and other requirements for a career in the healthcare industry. BIO 100 is strongly recommended as a prerequisite for the course.

General Education Requirements:

Prerequisites: Instructor Permission. BIO 100 is strongly recommended as a prerequisite for the course.

Course Typically Offered: Spring

Credits: 2

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.

General Education Requirements:

Prerequisites: Engineering majors or permission.

Course Typically Offered: Variable

Credits: 1

INT 125 - Experiential Program Innovation Central

This course is designed to provide an overview of experiential learning pathways for students at a 21-century land grant research institution. Students work in teams on a semester long project designed to train them on design thinking, and enhance communication and problem solving skills. Students will learn more about the research and experiential learning at the following University centers and will be trained on various topics including project initiation, management, implantation, and reporting Advanced Manufacturing Center (AMC), Advanced Structures and Composite Center (ASCC), Center for Undergraduate Research (CUGR), Center for Innovation in Teaching and Learning (CITL), Foster Center for Student Innovation, and Innovative Media Research and Commercialization Center (IMRC).

General Education Requirements: Application of Scientific Knowledge and Ethics

Course Typically Offered: Fall and Spring

Credits: 3

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.

General Education Requirements:

Course Typically Offered: Summer

Credits: 1-3

INT 192 - Introduction to Career Development

A 1 credit experiential course focused on assisting students with exploring and identifying their career interests and goals through the utilization of a structured career development process.

General Education Requirements:

Course Typically Offered: Fall

Credits: 1

INT 193 - Introduction to Career Exploration and Development

An experiential course designed to assist Early College students with exploring and identifying career interests and goals through the utilization of a structured career development process

General Education Requirements:

Prerequisites: Early College Students

Course Typically Offered: Fall, Spring, Summer

Credits: 2

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.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: Permission.

Course Typically Offered: Fall, Spring, Summer

Credits: 0-3

INT 207 - Orientation to Health Professions

This course will provide students with an understanding of the history, ethics, personal commitment, and other requirements for a career in the healthcare industry through participation in hands-on experiences and assignments. Students will develop content intended to prepare them for applying to health professions programs and/or careers in the healthcare industry.

General Education Requirements:

Prerequisites: BIO 200 or BIO 208 or permission of instructor

Course Typically Offered: Fall

Credits: 2

INT 398 - (BEN, CHE, 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.

General Education Requirements:

Course Typically Offered: Summer

Credits: 1-3

INT 421 - (CHB) Directed Study in Biomedical Engineering

A self-directed study opportunity coordinated by the biomedical engineering minor faculty.

General Education Requirements:

Prerequisites: INT 121 or permission; engineering majors only.

Course Typically Offered: Spring, Summer

Credits: 1-3

INT 489 - Advanced Topics in Interdisciplinary Studies

Advanced work addressing topics with an interdisciplinary focus, bringing together 3 or more relevant disciplines.

General Education Requirements:

Prerequisites: Permission of Instructor.

Course Typically Offered: Not Regularly Offered

Credits: 1-99

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.

General Education Requirements:

Credits: 1

INT 494 - 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:

Prerequisites: Junior or Senior standing.

Course Typically Offered: Fall, Spring, Summer

Credits: Ar

INT 495 - Experiencing History, Culture, and Societal Differences Through Travel Study

This course is designed to give students the opportunity to directly experience history, culture, and societal differences through travel study. Previous sections have included the study of Incan History & Architecture in Peru or Germany's culture and healthcare system. A more detailed course description can be found on the course syllabus.

General Education Requirements: Cultural Diversity and International Perspectives

Course Typically Offered: Spring

Credits: 3

International Affairs

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: Social Contexts and Institutions

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.)

General Education Requirements:

Course Typically Offered: Variable

Credits: 3

INA 310 - Camden Conference Course

This course accompanies the Camden Conference held each spring. The topic changes yearly. The course prepares for the year's topic with background readings and discussions. Students attend the conference and normally meet with conference participants. Subsequent meetings analyze the ideas presented during the conference.

General Education Requirements: Cultural Diversity or International Perspectives

Course Typically Offered: Spring

Credits: 3

INA 401 - Advanced Topics in International Affairs

Offers an advanced examination of a selected topic in international affairs. Specific topics will normally change, depending on visiting faculty, faculty research, and student interests. (May be repeated if topics vary).

General Education Requirements:

Prerequisites: Junior or Senior Standing or permission

Course Typically Offered: Not regularly offered

Credits: 3

Judaic Studies

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.

General Education Requirements: Western Cultural Tradition

Course Typically Offered: Fall

Credits: 3

JST 205 - Jewish History and Antisemitism from Antiquity to the Founding of the State of Israel

This course is a history of antisemitism, describing its manifestations from pre-Christian Alexandria to the founding of the State of Israel. Students will be exposed to several academic and popular theories of antisemitism, exploring debates about its proper scope and development, and integrate these ideas with a study of the arc of Jewish history, read closely together in primary sources.

General Education Requirements: Cultural Diversity and International Perspectives and Ethics

Course Typically Offered: Spring

Credits: 3

JST 383 - Topics in Judaic Studies

Topics in Judaic Studies

General Education Requirements:

Course Typically Offered: Variable

Credits: 3

Kinesiology and Physical Education

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.

General Education Requirements:

Prerequisites: ATR major or permission of Athletic Training Education Director.

Course Typically Offered: Fall

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.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: KPE 100 and KPE 253.

Course Typically Offered: Spring

Credits: 3

KPE 207 - Wilderness First Aid

This course provides foundational knowledge and skills needed to deal with medical and traumatic emergencies in remote settings. Topics include patient assessment, musculoskeletal and soft tissue injuries, wound care and infection, environmental emergencies, spinal cord management and moving patients, anaphylaxis and other medical emergencies, and CPR/AED. Successful completion of this course carries a nationally-recognized Wilderness First Aid (WFA) certification, and meets the medical training requirements for being a Registered Maine Guide, Maine Camp Trip Leader, and Maine Educational Leader.

General Education Requirements:

Course Typically Offered: Fall, Alternating years

Credits: 1

KPE 209 - Wilderness First Responder

This course provides the knowledge and skills necessary to deal with medical and traumatic emergencies in remote settings. Topics include patient assessment, difficult extrication and patient movement, basic search and rescue, allergies (including anaphylaxis certification), toxins, burns, wounds, fractures, dislocations, shock, spinal assessment and management, brain/head injuries, respiratory distress, heat and cold injuries, BLS CPR, legal issues and treatment of common backcountry ailments such as lost fillings, fish hook removal, fever, etc. Successful completion of this course carries a nationally-recognized WFR certification, and exceeds the Maine Guides requirements for medical training. Additional certification fee required.

General Education Requirements:

Prerequisites: Outdoor Leadership concentration or minor, or instructor permission required

Course Typically Offered: Spring Even Years

Credits: 3

KPE 237 - Swimming Skills

This course is designed to introduce beginners or non-swimmers to basic swimming and water safety skills. Students will progress through activities aimed at increasing comfort and confidence in the water. The overarching goal of this course is to help students develop into safe swimmers that can competently use a variety of strokes. This course is not appropriate for students who are already strong swimmers.

General Education Requirements:

Course Typically Offered: Fall & Spring

Credits: 3

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.

General Education Requirements:

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: Applications of Scientific Knowledge

Course Typically Offered: Fall and Spring

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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: KPE Majors only.

Course Typically Offered: Fall

Credits: 3

KPE 265 - Outdoor and Adventure Activities

This is an introductory course in outdoor and adventure activities, forming the foundation of an outdoor leadership education. The course focuses primarily on participation in four different activity categories: cross-country skiing and snowshoeing; bouldering and climbing; hiking and orienteering; and challenge course. The winter sports portion of the course will include instruction in snowshoeing and classic cross-country skiing, as well as the environmental and equipment considerations for safe outdoor activity participation in winter. The climbing portion of the course emphasizes the fundamental skills and safety knowledge needed for indoor bouldering and top-rope climbing, including risk management and belay certification. During orienteering students will learn and practice essential map and compass skills, and in the challenge course portion of the course students will learn about and practice the educational concepts behind facilitating and processing adventure-based activities.

General Education Requirements:

Prerequisites: KPE Major or Minor or permission.

Course Typically Offered: Spring

Credits: 3

KPE 266 - Teaching Dance and Creative Movement

This course is designed to introduce students to the instruction of creative movement, dance, and educational gymnastics. Students will acquire the tools needed to incorporate the basic principles of these activities into a physical education curriculum. The elements of creative and cultural dancing, as well as educational gymnastics, will be highlighted through guided exploration. Students will engage in problem solving through movement, learn and develop a variety of dances, and design developmentally appropriate creative movement lessons for learners of all ages. To complete this experience, students will develop authentic assessments to evaluate the effectiveness of instruction and promote life-long physical literacy through creative movement, dance, and educational gymnastics activities.

General Education Requirements: Artistic and Creative Expression

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.

General Education Requirements:

Prerequisites: ATR or KPE major or permission.

Course Typically Offered: Fall & Spring

Credits: 3

KPE 271 - Professional Dispositions and Research in Physical and Health Education

This course is designed to introduce professional dispositions and research skills for Physical Education and Health Education preservice teachers. Past and current educational successes and challenges related to sport, physical education and health education will be reviewed through research projects, reflections, and discussions. Writing Intensive Key assessments are a part of this course. An interview assignment with a current PE or Health Education is required. Steps towards Teacher Candidacy will be required in this course.

General Education Requirements: Writing Intensive

Prerequisites: ENG 101 or equivalent, KPE Major or permission

Course Typically Offered: Spring

Credits: 3

KPE 280 - Introduction to Paddling Instruction and Safety

This course covers the fundamentals of paddling skills, paddling instruction, and safety in fresh water. Students will learn a variety of paddling strokes and boat maneuvering skills in a number of paddling disciplines including canoeing, stand up paddleboarding, and kayaking. In addition, students will learn about and practice swift water rescue, trip planning, on-water group management, equipment management, and safety procedures. Instructing paddling skills is the focus for the second half of the course, and students will spend considerable time practicing and reflecting on their instruction and leadership skills.

General Education Requirements:

Prerequisites: KPE Major or Minor or permission.

Course Typically Offered: Spring

Credits: 3

KPE 286 - Introduction to Outdoor Leadership and Facilitation

This course focuses on the study and practice of outdoor leadership theory, styles, and techniques applied to education and recreation settings. It is designed to be an introduction to outdoor leadership and facilitation skills, and to create a foundation of knowledge to be built upon in future coursework. Course content will include outdoor leadership theories and applications; individual leadership abilities and assessment; and group development, communication, and decision making.

General Education Requirements:

Prerequisites: Outdoor Leadership minor or concentration or permission

Course Typically Offered: Fall and Spring

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.

General Education Requirements:

Prerequisites: ATR major or permission of Athletic Training Education Director.

Course Typically Offered: Spring Even Years

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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: ATR major or permission of Athletic Training Education Director.

Course Typically Offered: Spring, Even Years

Credits: 1

KPE 304 - Assessment Technology and Data Management for Physical & Health Education and Exercise Prescription

This course introduces physical and health education pre-service teachers and exercise science majors to technology, data literacy, and statistics with a focus on the tools used in physical and health education and exercise prescription settings. Students will become familiar with coding and formatting techniques in Microsoft Excel, statistical methods including probability, measures of central tendency, t-tests, and Pearson correlation, and practical application of technologies and concepts using real data. Students will be challenged to identify, justify, and apply technology, assessment tools, and statistical methods in meaningful and innovative ways with the aim of enhancing outcomes in health and human movement settings.

General Education Requirements: Quantitative Literacy

Prerequisites: KPE Major or Permission

Course Typically Offered: Fall and Spring

Credits: 3

KPE 307 - Anatomy and Injuries of the Trunk and Lower Extremity

Familiarize students with human musculoskeletal anatomy and common injuries to the lower extremity. They will also learn basic strength and range of motion skills used to assess the lower extremity.

General Education Requirements:

Prerequisites: KPE 250

Course Typically Offered: Fall

Credits: 3

KPE 308 - Anatomy and Injuries of the Upper Extremity

Familiarize students with human musculoskeletal anatomy and common injuries to the upper extremity. They will also learn basic strength and range of motion skills for assessing the upper extremity.

General Education Requirements:

Prerequisites: KPE 250

Course Typically Offered: Spring

Credits: 3

KPE 311 - Advanced Methods of Instructing Outdoor Activities

This course establishes a strong foundation in outdoor instruction skills for students wishing to pursue careers in outdoor leadership. Students will learn about and practice specific instructional skills for a variety of outdoor activities. In this context of instructional planning and execution, students will explore overarching topics including equipment selection and maintenance, weather and environment, safety and risk management, and lesson planning and management.

General Education Requirements:

Prerequisites: KPE 265 and KPE 286 or permission.

Course Typically Offered: Fall

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.

General Education Requirements:

Prerequisites: Sophomore standing.

Course Typically Offered: Fall

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.

General Education Requirements:

Prerequisites: KPE 262 and permission.

Course Typically Offered: 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.

General Education Requirements:

Prerequisites: KPE 262 and permission.

Course Typically Offered: Fall

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.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: Athletic Training or Kinesiology and Physical Education major, or by permission

Course Typically Offered: Fall & Spring

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.

General Education Requirements:

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: Writing Intensive

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.

General Education Requirements:

Prerequisites: Instructor Permission

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.

General Education Requirements:

Prerequisites: KPE 308 or Permission

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.

General Education Requirements:

Prerequisites: KPE 307 or permission

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.

General Education Requirements:

Prerequisites: KPE 307 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.

General Education Requirements:

Prerequisites: KPE 307

Course Typically Offered: Spring

Credits: 4

KPE 396 - Outdoor Leadership Field Experience

Students in this course will experience first-hand outdoor leadership opportunities in immersive, field-based settings led by expert faculty. Course content will focus on practical outdoor leadership skills in diverse environments and settings, including the back-country. Working with community partners, students will have the opportunity to practice their outdoor leadership skills in the field in authentic programmatic settings. Overnight travel and outdoor activity participation is required. The exact activities covered will depend on the season the course is offered. This course is typically offered as a two-week intensive and there is a course fee. This course is for students in the Outdoor Leadership Minor or concentration.

General Education Requirements:

Prerequisites: Permission

Course Typically Offered: Spring

Credits: 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.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: Senior standing; ATR or KPE major or permission of Athletic Training Education Director.

Course Typically Offered: Fall

Credits: 3

KPE 411 - Ethics and Social Justice in Outdoor Leadership

In this course students will explore and critically discuss ethical and social justice issues related to outdoor activities, programming, and leadership. Topics will include wilderness travel ethics, diversity and gender issues in outdoor programming and leadership, and the creation of inclusive and equitable opportunities for all. Students will be asked to examine their own beliefs and experiences, and to consider their importance in shaping outdoor leadership identities.

General Education Requirements: Cultural Diversity and International Perspectives and Ethics

Prerequisites: KPE 265

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: Writing Intensive

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.

General Education Requirements:

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: Capstone Experience

Prerequisites: KPE 426 and a 2.75 Cumulative GPA

Course Typically Offered: Fall, Spring, Summer

Credits: 3-6

KPE 450 - Bringing the Classroom Outdoors

This course is for pre-service or in-service educators who wish to expand their skills in facilitating outdoor learning experiences for their students. After exploring the theories and research behind outdoor learning, we will shift our focus to practical, hands-on content for implementing outdoor learning. Emphasis will be placed on exploring and increasing skills in the following areas: use of experiential learning techniques in outdoor settings; risk and group management in outdoor settings; being comfortable in a variety of outdoor activities and environments; and creating effective and enriching outdoor learning experiences.

Course Note: This course meets the training requirements of the state of Maine's Educational Trip Leader Permit, which allows educators to bring students outdoors in settings that would normally require a Registered Maine Guide Recreation license. Note that this course does not fulfill the Wilderness First Aid portion of the requirements.

Prerequisites: Junior Standing or permission

Course Typically Offered: Summer

Credits: 3

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.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: KPE 483

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.

General Education Requirements:

Prerequisites: KPE 378

Course Typically Offered: Fall, Spring, Summer

Credits: 3

Labor Studies

LST 101 - Introduction to Labor Studies

Introduction to the field of Labor Studies, an 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: Social Contexts and Institutions

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: Social Contexts and Institutions

Prerequisites: ECO 120 or HTY 104 or POS 100 or SOC 101 or permission of instructor.

Course Typically Offered: Spring

Credits: 3

LST 298 - Topics in Labor Studies

Offers a detailed examination of selected topics in Labor Studies, providing an opportunity for students to apply what they have learned in Labor Studies 101 or 201 to an in-depth examination of a specific topic. Topics may include the impact of automation on low wage labor, alternative dispute resolution in labor relations, public sector collective bargaining, and strikes in Maine labor history. May be repeated if topics vary.

General Education Requirements:

Prerequisites: LST 101 or 201

Course Typically Offered: Summer

Credits: 3

Latin

LAT 101 - Elementary Latin I

Fundamentals of the Latin language.

General Education Requirements:

Course Typically Offered: Fall

Credits: 4

LAT 102 - Elementary Latin II

Fundamentals of the Latin language.

General Education Requirements:

Prerequisites: LAT 101 or equivalent.

Course Typically Offered: Spring

Credits: 4

Leadership Studies

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: Social Context and Institutions

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: Ethics and the Writing Intensive

Prerequisites: LDR 100 or permission

Course Typically Offered: Fall and Spring

Credits: 3

LDR 210 - Leadership and Sports

Examines the exercise of leadership in sports settings. Pays special attention to team dynamics, the role of culture and organization in teams, strategic management practices in sports applications, and the ethical challenges of highly competitive environments.

General Education Requirements:

Prerequisites: LDR 100 or permission

Course Typically Offered: Fall

Credits: 3

LDR 220 - Leadership and Social Movements

Examines the role of social movements in processes of political and social change. Pays special attention to movement strategies and tactics, member recruitment, the dynamic interaction between activists and elites, and the mobilization of resources for movement sustainability.

General Education Requirements:

Prerequisites: LDR 100 or permission

Course Typically Offered: Fall, Alternating years

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: Social Contexts and Institutions

Prerequisites: LDR 100 or permission

Course Typically Offered: Fall and Spring

Credits: 3

LDR 330 - Crisis Leadership and Decision Making

Examines processes of decision-making during crisis moments. Pays special attention to individual psychology, organizational culture, and cognitive biases. Explores decision-making during crisis moments through historical and contemporary case studies.

General Education Requirements:

Prerequisites: LDR 100 or permission of the instructor or at least three credits from the following courses: MSL 101, MSL 102, MSL 201 or MSL 2202

Course Typically Offered: Spring, Alternating years

Credits: 3

LDR 340 - Inclusive Leadership

Examines the role of diversity, equity, inclusion, and justice in leadership development. Analyzes and evaluates best practices for building and managing inclusive organizations. Pays special attention to individual and institutional processes that can promote or inhibit inclusive leadership.

Prerequisites: LDR 100 or permission of the instructor

Course Typically Offered: Spring, Alternating years

Credits: 3

LDR 350 - Topics in Leadership Studies

Offers an in-depth examination of a selected topic in leadership studies.

General Education Requirements:

Prerequisites: LDR 100 or permission

Course Typically Offered: Fall and Spring

Credits: 3

LDR 370 - Leadership through Advocacy and Lobbying

Provides an intensive exploration of public affairs leadership through the art and craft of public advocacy and lobbying. Immersion in the strategies, tactics, methods, techniques, regulations, and ethics of those who advocate public policy options to elected officials. If this course was taken under as a topics course in LDR 350, it cannot be repeated for credit.

General Education Requirements:

Prerequisites: LDR 100 or POS 100 or permission of the instructor and LDR 370 cannot be taken for credit after passing LDR 350 with the topic: Leadership through Advocacy & Lobbying

Credits: 3

LDR 380 - SL: Leadership and Service

Interdisciplinary analysis of servant leadership, public service, and engaged citizenship. Exploration of the ethics and practice of service-oriented leadership through the implementation of a sustained service-learning project. Critical reflection of students' roles as leaders, followers, and engaged citizens.

General Education Requirements: Ethics

Prerequisites: Permission of the Instructor

Course Typically Offered: Spring

Credits: 3

LDR 390 - Contemporary Leadership and the Art of Political Strategy

Detailed case studies of contemporary and historical leaders through their involvement in major events. Special focus is given to the ways in which diverse leaders confront risk, as well as determinants of leadership success and failure. Application of leadership lessons to contemporary situations. If this course was taken under as a topics course in LDR 350, it cannot be repeated for credit.

General Education Requirements: Social Context and Institutions

Prerequisites: LDR 100 or POS 100 or permission of the instructor.

Course Typically Offered: Spring

Credits: 3

LDR 395 - Bipartisan Leadership: Lessons for William S. Cohen's Career in Public Service

Examination of the rise of political polarization and gridlock in contemporary American politics. Analyzes prospects for bipartisan coalition building by investigating original archival documents related to William S. Cohen's career in the House, Senate, and as Secretary of Defense. Special attention is paid to Cohen's efforts to cross party lines in pursuit of common interests. If this course was taken under as a topics course in LDR 350, it cannot be repeated for credit.

General Education Requirements: Writing Intensive

Prerequisites: LDR 100 or POS 100 or permission of the instructor

Course Typically Offered: Fall

Credits: 3

LDR 495 - Washington D.C. Leadership Institute

An immersive travel course to Washington D.C. that examines hands-on, advanced leadership perspectives in times of unpredictable change. Offers intensive leadership seminars on location in the nation's capital with notable leaders in fields such as government, foreign affairs, the military, business, non-profit organizations, athletics, education, and the arts. Includes numerous site visits to compelling destinations. If this course was taken under as a topics course in LDR 350, it cannot be repeated for credit.

General Education Requirements: Social Context and Institutions

Prerequisites: Permission of the Instructor

Course Typically Offered: Summer

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.

General Education Requirements:

Prerequisites: LDR 300 or Permission of the instructor

Course Typically Offered: Fall and Spring

Credits: 3

Liberal Arts and Sciences

LAS 102 - Reclaiming Academic Success

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.

General Education Requirements:

Prerequisites: Permission

Credits: 1

LAS 104 - Career, Character, and Happiness

This course is designed to give you the tools to make informed decisions about your educational and career goals. In part one, philosophical and psychological perspectives on happiness are explored. Students are encouraged to develop a reflective sense of what a good life means for them as individuals. They will also gain an understanding of how career satisfaction and happiness are related. In part two, using tools designed for self-assessment, reflective writing, and discussion, students will identify their strengths, values, interests, and skills. They will also consider how social-environmental factors influence their choices and opportunities. In part three, students will make informed decisions about their educational and career goals. They will locate and evaluate material and relevant information about the careers that interest them.

General Education Requirements:

Prerequisites: Sophomore standing or higher

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.

General Education Requirements:

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).

General Education Requirements:

Prerequisites: Approval by CLAS Faculty Advisor.

Course Typically Offered: Fall, Spring, Summer

Credits: 1-3

LAS 497 - Independent Study: Capstone for Bachelor of University Studies

Independent study: Capstone for Bachelor of University Studies

General Education Requirements: Writing Intensive and Capstone

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

Library

LBR 101 - Introduction to Information Literacy for STEM Fields

This course provides students a foundation in navigating information resources used in an academic environment. Emphasis on developing research and critical thinking skills in STEM fields. Students enrolled in LBR 101 cannot receive credit for LBR 102.

General Education Requirements:

Course Typically Offered: Fall

Credits: 1

LBR 102 - Introduction to Information Literacy

This course provides students a foundation in navigating information resources used in an academic environment. Emphasis on developing research and critical thinking skills. Students enrolled in LBR 102 cannot receive credit for LBR 101.

General Education Requirements:

Course Typically Offered: Fall

Credits: 1

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: Social Contexts and Institutions

Course Typically Offered: Fall & Spring

Credits: 3

Maine Studies

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: Population and the Environment and Writing Intensive

Course Typically Offered: Fall, Spring, Summer

Credits: 3

MES 102 - My Maine Experience

An interdisciplinary approach to the study of Maine which combines lecture and experiential learning to allow students to explore the variegated landscapes and cultures of Maine and to better understand the interactions between the people of Maine and the environment of Maine.

General Education Requirements:

Course Typically Offered: Fall and Spring

Credits: 1

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: Population and the Environment' , 'Social Contexts and Institutions' , 'and Writing Intensive

Course Typically Offered: Fall, Spring, Summer

Credits: 3

MES 298 - Topics in Maine Studies

This introductory level course looks at special topics related to the study of Maine from one or more disciplinary perspectives. Specific topics vary by summer, and courses are often combined with other departments. Class topics, descriptions, and other specific information can be found on the course search page. Students may repeat this course twice if the specific topic is different each time.

General Education Requirements:

Course Typically Offered: Fall, Spring, and 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: Population and the Environment and Writing Intensive

Course Typically Offered: Variable

Credits: 3

MES 350 - Maine Women

This interdisciplinary course examines women's experiences in Maine, both historical and current. Through readings, writing assignments, and discussions, this course considers Maine women individually and collectively in such roles as industrial workers, reformers, performers, writers, politicians, and mothers. This course asks several major questions: How have Maine's particular environment, culture, economy, and history shaped women's experiences in the state? How have national movements (for example suffrage, ERA, welfare reform) shaped women's lives in Maine? How have issues of class, race, and ethnicity intersected with gender in Maine?

General Education Requirements: Western Cultural Tradition and the Cultural Diversity and International Perspectives
Course Typically Offered: Variable
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.)

General Education Requirements:
Prerequisites: Junior or Senior standing or permission.
Course Typically Offered: Fall, Spring, Summer
Credits: 1-3

Management

MGT 101 - Introduction to Business

This course is designed to introduce students to the contemporary business world. It includes the basic understanding of a business plan and the dynamics of core business areas. By the end of the course, students will have a clearer understanding of the different career trajectories within the world of business, their role within the global market system, and the social, economic, political, and environmental responsibility that comes with the profession of business.

General Education Requirements:
Prerequisites: 1st year or Sophomores or permission
Course Typically Offered: Fall and Spring
Credits: 3

MGT 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: Social Contexts and Institutions and Ethics Requirements. Must be taken in series with MGT 449 to meet Ethics requirement. Neither course alone fulfills the requirement.
Prerequisites: Sophomore Standing
Course Typically Offered: Fall & Spring
Credits: 3

MGT 290 - Introduction to Topics in Management

Introduces student to aspects of the Management discipline. Special topics may include areas relevant to any aspect of management at an introductory level. This course may be repeated for credits.

General Education Requirements:

Prerequisites: Business Major or Minor

Course Typically Offered: Not Regularly Offered

Credits: 1-3

MGT 325 - Principles of Management and Organization

An introduction to the systems of management in business enterprises for both domestic and international organizations. The focus is on concepts, methods, and techniques of planning, organizing, directing, leading, and controlling the functions of the modern manager, and the impact of these processes upon effective interpersonal relations. The course incorporates the environmental, social and governance (ESG) framework to introduce the principles of global intercultural competencies.

General Education Requirements:

Prerequisites: A grade of C- or better in ECO 120 and in PSY 100 and Sophomore Standing.

Course Typically Offered: Fall & Spring

Credits: 3

MGT 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.

General Education Requirements:

Prerequisites: Junior Standing, a grade of C- or better in MGT 325 and in PSY 100.

Course Typically Offered: Fall & Spring

Credits: 3

MGT 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.

General Education Requirements:

Prerequisites: A grade of C- or better in MGT 325.

Course Typically Offered: Spring & Fall

Credits: 3

MGT 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: Cultural Diversity and International Perspectives

Prerequisites: Junior standing.

Course Typically Offered: Fall

Credits: 3

MGT 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: Writing Intensive

Prerequisites: A grade of C- or better in ECO 120, in ECO 121, and in PSY 100, or equivalent or permission; junior standing.

Course Typically Offered: Fall and Spring

Credits: 3

MGT 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: Social Contexts and Institutions

Prerequisites: Junior standing.

Course Typically Offered: Variable

Credits: 3

MGT 335 - Advanced Dispute Resolution: Negotiation, Mediation and Arbitration

This course will introduce students to a range of dispute resolution options that businesses use as alternatives to litigation. Options that the course will explore are negotiation, mediation, arbitration, and collaborative law. Students will have the chance to practice dispute resolution skills, and to use these skills in various role play exercises/simulations. The class will focus on both the perspective of the business in disputes and of the neutral working with parties who are trying to resolve a dispute. The course will also address the role of emotions, gender, race, and culture in dispute resolution, as well as ethical issues. Cannot be repeated for credit if taken as a topics course in BUA 490.

General Education Requirements:

Prerequisites: Sophomore standing

Course Typically Offered: Variable

Credits: 3

MGT 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.

General Education Requirements:

Prerequisites: Junior Standing and a grade of C- or better in ACC 202, BIS 105, MGT 101 and STS 215 or STS 232

Course Typically Offered: Fall & Spring

Credits: 3

MGT 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.

General Education Requirements:

Prerequisites: Junior or Senior Standing

Course Typically Offered: Spring

Credits: 3

MGT 343 - Introduction to International Business

Examines international business in the current era of globalization. The course emphasizes the role of cultural differences, government, laws, regulations, ethics and corporate social responsibility for the decision-making process of international business. It introduces students to the international political economy, entry into foreign markets, international business strategy, and the connections that exist between local and global issues.

General Education Requirements:

Prerequisites: Business, Economics or Financial Economics Major or Business Administration or Management Minor and Junior Standing and a grade of C- or better in ECO 120 and in ECO 121

Course Typically Offered: Fall & Spring

Credits: 3

MGT 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.

General Education Requirements:

Prerequisites: Junior Standing, a grade of C- or better in ACC 201, and in MGT 325.

Course Typically Offered: Fall

Credits: 3

MGT 396 - Field Experience/Internship in Management

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.)

General Education Requirements:

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

MGT 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.

General Education Requirements:

Prerequisites: Grade of C- or better in MGT 325 and MGT 343.

Course Typically Offered: Fall

Credits: 3

MGT 449 - Strategic Management

As the capstone, the course requires that the student draw together the knowledge gained in all core business coursework to analyze contemporary challenges facing business organizations. Students demonstrate their ability to interconnect these topics using strategic management skills and analytical tools. Through in-depth study of increasingly complex business and not-for-profit organizational problems, students develop critical thinking and problem-solving skills to identify issues, develop recommendations to address the issues, and communicate their results.

General Education Requirements: Capstone Experience Requirements. Must be taken in series with MGT 220 to meet Ethics requirement.

Prerequisites: Senior standing Business Administration majors, A grade of C- or better in MGT 325 & FIN 350 & MKT 270; Not open to Graduate Students and may not be taken for graduate credit.

Course Typically Offered: Fall & Spring

Credits: 3

MGT 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.

General Education Requirements:

Prerequisites: Junior standing and permission.

Course Typically Offered: Variable

Credits: 1-3

MGT 498 - Independent Study for Undergraduate in Management

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 the instructor.

General Education Requirements:

Prerequisites: Senior standing, a cumulative GPA of at least 3.25 and permission.

Course Typically Offered: Fall & Spring

Credits: 1-3

Marine Science

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: Applications of Scientific Knowledge and Population and the Environment

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: Applications of Scientific Knowledge and Population and the Environment

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: 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: Lab in the Basic or Applied Sciences requirement when taken with SMS 110.

Course Typically Offered: Summer

Credits: 1

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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: MAT 122 or MAT 116 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: 3

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: Applications of Scientific Knowledge

Prerequisites: BIO 100

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: Population and Environment

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. Course may have field trips during class times.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

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

Illustrates the application of techniques and concepts in physiology, cellular and molecular biological techniques to the study of marine systems. Hands-on activities will explore the nature of scientific inquiry, reading and interpretation of the primary literature, elements of experimental design, and statistical analysis and presentation of student-generated data.

General Education Requirements:

Prerequisites: SMS 203

Course Typically Offered: Spring

Credits: 3

SMS 308 - 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.

General Education Requirements:

Prerequisites: BIO 200 or SMS 201

Course Typically Offered: Fall

Credits: 3

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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: Permission; BIO 100 and SMS 100, and Sophomore or Graduate Student standing.

Course Typically Offered: Fall and Summer

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.

General Education Requirements:

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 biodiversity, 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 scientific report writing are emphasized. Students revise subsequent reports based on extensive critiques from the instructor(s). Instructor critique each week covers elements of composition style and conventions used in scientific writing. (Taught at the Darling Marine Center.) Course may have field trips during class times.

General Education Requirements: Writing Intensive

Course Typically Offered: Fall

Credits: 4

SMS 354 - The Arctic 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 the Arctic Ocean (AO). Students will work together to examine diverse issues concerning the rapid changes that occur in this environment at multiple spatial, temporal and organizational scales, and the global implications of these changes. Students 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, marine biology, the Earth climate system and human-ocean interactions.

General Education Requirements:

Prerequisites: SMS 100, CHY 121 and CHY 123 and Junior Standing

Course Typically Offered: Fall

Credits: 3

SMS 374 - Deep Sea Biology

70% of this planet is ocean, and 90% of that ocean lies at depths beyond human reach without significant technological help. The Deep-sea is arguably the largest ecosystem on the planet. This course will provide an introduction to scientific exploration and study of deep ecosystems and organisms around the world. Topics considered will be broad, covering historical aspects of deep-sea discovery, the physical environment, how organisms function at depth, specific environments and ecosystems (e.g. hydrothermal vents, seamounts, cold-water coral ecosystems) and human uses of the deep-sea.

General Education Requirements: Population and Environment and Applied Science

Prerequisites: BIO 100 or BIO 122 or SMS 100

Course Typically Offered: Spring and Summer

Credits: 3

SMS 375 - Introduction to Marine Science Data Analysis and Computer Programming

An introduction to the exploration, management, analysis, and graphical visualization of large data sets used in marine sciences and the computer programming tools that make this possible. Focuses on the widely used programming language and data analysis package MATLAB. A hands-on skills-oriented course with no exams: uses explanatory lectures, on-line and in-class tutorials/exercises and a student-driven term project.

General Education Requirements:

Prerequisites: STS 232 and SMS 204 or permission.

Course Typically Offered: Fall

Credits: 3

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: Senior Standing and Department consent required.

Course Typically Offered: Fall, Spring and Summer

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.

General Education Requirements:

Prerequisites: SMS 211, SMS 409 and SMS 420.

Course Typically Offered: Fall and Spring

Credits: 1

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 Writing Intensive and Capstone Experience. 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).

General Education Requirements:

Prerequisites: A grade of C or better in both SMS 204 and PHY 112 or PHY 122

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.

General Education Requirements:

Prerequisites: BIO 200 or SMS 201.

Course Typically Offered: Fall

Credits: 3

SMS 423 - The Biology of Sharks

In this course students will develop a sound understanding of shark and elasmobranch biology. The course will take an evolutionary and comparative physiological approach to the many orders of elasmobranchs. The course will explore five major areas of shark biology and the current challenges to sharks in the modern world; shark evolution, shark ecology, shark physiology, shark behavior and shark fisheries. We will also look at the current pressures humans exert on sharks, particularly those caused by overfishing, and the issues surrounding captive sharks in public aquaria. By the end of the course, the students should have a sound understanding of how sharks are adapted to their environments and why they have remained one of the most successful groups of vertebrates over the last 420 million years. If this course was taken as a topics course in SMS 491, it cannot be repeated for credit.

General Education Requirements:

Prerequisites: SMS 322 or SMS 422

Course Typically Offered: Spring

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.

General Education Requirements:

Prerequisites: BIO 100 or permission.

Course Typically Offered: Spring, Even Years

Credits: 3

SMS 430 - Microbes in the Marine Environment

This course examines the molecular building blocks of cells, structure and function of cells (Bacteria, Archaea, and eukaryotes) and cellular metabolism in the context of the marine environment, with a primary focus on microbes. Viruses and their role in evolution of microbes and nutrient cycling in the ocean are discussed. Basic molecular information is integrated into understanding evolutionary processes and mechanism of microbial interaction with higher organisms, symbiotic and pathogenic in the marine environment. Microbes in extreme environments are explored to demonstrate how molecular and cellular adaptations play out in different marine environments. Biochemical and microbial processes that are critical to the maintenance and function of the biosphere are examined, with examples from marine environments. Overall, students in this course will learn how to integrate across different spatial scales, from molecules to ecosystems, and approaches, from cellular biology to evolution. If this course was taken as a topics course in SMS 491, it cannot be repeated for credit.

General Education Requirements:

Prerequisites: Junior Standing and BIO 100 and CHY 121

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.

General Education Requirements:

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.)

General Education Requirements:

Course Typically Offered: Fall, Spring, Summer

Credits: 1 - 16

SMS 479 - Semester-by-the-Sea: Microbial Ecology

Microbes-Bacteria, Archaea, and single celled eukaryotes - are the most diverse group of organisms on Earth. Microbes underlie the ecological function of every ecosystem, and are wonderfully mysterious and exciting to study. This field and lab based course will introduce students to methods used to investigate microbial diversity and habitats in the marine environment. This course emphasizes learning the scientific process first hand through the lens of microbial ecology. Students will become familiar with molecular techniques and sequence data and how they are analyzed to understand microbial diversity. Students will quantify chemical gradients and reaction rates that influence microbial activities and distribution in the marine environment. They will learn about metabolic diversity of microbes and how this diversity plays out on broader ecological scales. Students will conduct experiments and analyze and interpret results, with an overall emphasis on investigative learning and integration with prior knowledge through writing and presentations. If this course was taken as a topics course in SMS 491, it cannot be repeated for credit.

General Education Requirements:

Prerequisites: Jr. Standing and BIO 100 and CHY 121

Course Typically Offered: Fall

Credits: 4

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.

General Education Requirements:

Prerequisites: SMS 100 and SMS 201 or BIO 200.

Course Typically Offered: Fall

Credits: 4

SMS 484 - SBS: Estuarine Oceanography

The course examines estuaries from an environmental perspective - how geomorphology, rivers, tides, and human alterations control the physical and biological properties of estuarine habitats. Fieldwork in mid-coast Maine estuaries includes visits to various habitats with human impacts, and hydrographic surveys that use various water, sediment and biota samplers, field sensors, laboratory and modeling approaches. Students will learn how planktonic and sessile organisms respond to forcings from land and the ocean. This course is part of Semester by the Sea at the Darling Marine Center in Walpole, Maine. Because it is a field-intensive course, it can be used towards the marine science field experience requirement.

General Education Requirements:

Prerequisites: SMS 100

Course Typically Offered: Fall

Credits: 4

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.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: Permission of instructor.

Course Typically Offered: Fall, Spring, Summer

Credits: 1-4

Marketing

MKT 270 - Introduction to Marketing

Introduces students to the concepts, analyses, and activities that comprise marketing strategy and tactics, and provides practice in market analysis and marketing planning. Topics include: marketing strategy (segmentation, targeting and positioning), market environmental analysis, consumer behavior, marketing research, product management, pricing, marketing communications, and channels of distribution.

General Education Requirements:

Prerequisites: MGT 101; Business, Economics or Financial Economic Major or Declared Business and/or Marketing Minor

Course Typically Offered: Fall & Spring

Credits: 3

MKT 290 - Introduction to Topics in Marketing

Introduces students to aspects of the Marketing discipline. Special topics may include areas relevant to any aspect of marketing at an introductory level. This course may be repeated for credits.

Prerequisites: Business Major or Minor

Course Typically Offered: Variable

Credits: 1-3

MKT 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.

General Education Requirements:

Prerequisites: A grade of C- or better in MKT 270 and Junior or Senior standing

Course Typically Offered: Spring & Fall

Credits: 3

MKT 372 - Integrated 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.

General Education Requirements:

Prerequisites: A grade of C- or better in MKT 270.

Course Typically Offered: Fall

Credits: 3

MKT 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.

General Education Requirements:

Prerequisites: A grade of C- or better in MKT 270.

Course Typically Offered: Variable

Credits: 3

MKT 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.

General Education Requirements:

Prerequisites: A grade of C- or better in MGT 343 and MKT 270; junior standing.

Course Typically Offered: Variable

Credits: 3

MKT 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.

General Education Requirements:

Prerequisites: A grade of C- or better in MKT 270, STS 215 or STS 232; junior standing.

Course Typically Offered: Fall & Spring

Credits: 3

MKT 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.

General Education Requirements:

Prerequisites: A grade of C- or better in MKT 270 and Junior or Senior Standing.

Course Typically Offered: Fall and Spring

Credits: 3

MKT 385 - Digital Marketing

The purpose of digital marketing is to prepare students with a foundational understanding of digital marketing channels and how successful marketing campaigns use online and mobile platforms. This course covers the fundamentals of digital marketing, including internet marketing strategies, user-generated content, search engine optimization, website design and management, inbound marketing, email marketing, social media campaigns, mobile apps, content strategy, and paid advertising.

Prerequisites: A grade of C- or better in MKT 270

Course Typically Offered: Spring

Credits: 3

MKT 396 - Field Experience/Internship in Marketing

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.)

General Education Requirements:

Prerequisites: Business Majors with 2.50 GPA or better; Junior Standing

Course Typically Offered: Fall, Spring, Summer

Credits: 1-6

MKT 476 - New Product Management

New products and services are vital to the success of all companies. However, innovation is risky and most new products fail in the marketplace. The course focuses on the tools and techniques associated with selecting and analyzing market opportunities. It also examines the processes involved in designing, testing, and introducing new products and services that capitalize on those opportunities and fit company strategy. Both quantitative and qualitative approaches are covered. In particular, the course covers new product development processes, product development project management, market entry strategies, new product idea generation, and forecasting market demand. All types of product development projects are considered from breakthrough products to new platforms to brand and line extensions to product improvements in the context of both large corporations and small entrepreneurial firms.

General Education Requirements:

Prerequisites: Junior Standing

Course Typically Offered: Variable

Credits: 3

MKT 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: Writing Intensive

Prerequisites: A grade of C- or better in MKT 378 or MKT 382 and Senior Standing or by instructor permission.

Course Typically Offered: Spring and Fall

Credits: 3

MKT 490 - Special Topics in Marketing

Study of various aspects of functional areas of Marketing. Topics vary depending on faculty and student interests. May be repeated for credit if the topics differ.

General Education Requirements:

Prerequisites: MKT 270 and Junior Standing

Course Typically Offered: Variable

Credits: 1-3

Mathematics

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: Quantitative Literacy

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: Quantitative Literacy

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: Quantitative Literacy

Prerequisites: High school geometry required. Elementary Education, Child Development-Early Childhood Education, and Art Education majors only.

Course Typically Offered: Fall and Spring

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: Quantitative Literacy

Prerequisites: Elementary Education, Child Development-Early Childhood Education, and Art Education majors only.

Course Typically Offered: Fall and Spring

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. Note: This course does not satisfy the General Education in Quantitative Literacy Requirement.

General Education Requirements:

Prerequisites: A passing score on the Math 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: Quantitative Literacy

Prerequisites: A grade of C or better in MAT 111, or no grade record in MAT 111 and a passing score on the Math Placement Exam.

Course Typically Offered: Fall, Spring, Summer

Credits: 3

MAT 116 - Introduction to Calculus

A three-credit introduction to calculus primarily intended for students in business, life sciences, or social sciences. The focus is on concepts and applications, utilizing numerical, graphical, and algebraic approaches and uses of technology. Topics include functions (algebraic, exponential, logarithmic, and elementary trig functions), and an overview of differential and integral calculus.

Due to overlapping content, credit previously earned for MAT 126 will be removed upon completion of MAT 116. Both grades will appear on the transcript and will be utilized in GPA calculations. Departmental permission to enroll is required if previously completed MAT 126.

General Education Requirements: Quantitative Literacy

Prerequisites: A grade of C or better in MAT 111, or no grade record in MAT 111 and a passing score on the Math Placement Exam.

Course Typically Offered: Fall and Spring

Credits: 3

MAT 117 - Applications of Calculus

A three-credit continuation to the introduction to calculus (MAT 116) primarily intended for students in business, life sciences, or social sciences. The focus is on applications and concepts, utilizing numerical, graphical and algebraic approaches and uses of technology. Utilizing and expanding on the variety of problem solving approaches developed in MAT 116, the focus will be on applications (such as optimization and accumulation) and additional topics including differential equations.

Due to overlapping content, credit previously earned for MAT 127 will be removed upon completion of MAT 117. Both grades will appear on the transcript and will be utilized in GPA calculations. Departmental permission to enroll is required if previously completed MAT 127.

General Education Requirements: Quantitative Literacy

Prerequisites: A grade of C or better in MAT 116 or MAT 126

Course Typically Offered: Spring

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: Quantitative Literacy

Prerequisites: A grade of C or better in MAT 111, or no grade record in MAT 111 and a passing score on 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.

Departmental permission to enroll is required if previously completed MAT 116. Due to overlapping content, course repeat rules are applicable for MAT 126 and MAT 136.

General Education Requirements: Quantitative Literacy

Prerequisites: A grade of C or better in MAT 122, or no grade record in MAT 122 and a passing score on 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.

Departmental permission to enroll is required if previously completed MAT 117. Due to overlapping content, course repeat rules are applicable for MAT 127 and MAT 137.

General Education Requirements: Quantitative Literacy

Prerequisites: A grade of C or better in MAT 126 at the University of Maine or other system campuses. (Students who have transferred an equivalent class to UMaine will need to contact the Math Department for registration and advising where appropriate.)

Course Typically Offered: Fall, Spring, Summer

Credits: 4

MAT 136 - Honors Level Calculus I

A more challenging introduction to calculus for students in mathematics, engineering, and the sciences. Covers differential and integral calculus of real functions of one variable, up to and including the fundamental theorem of calculus. The topics presented are similar to those in MAT 126, but theoretical concepts receive greater emphasis and problems of greater depth and scope are considered. Due to overlapping content, course repeat rules are applicable for MAT 126 and MAT 136.

General Education Requirements: Quantitative Literacy

Prerequisites: Departmental permission.

Course Typically Offered: Fall

Credits: 4

MAT 137 - Honors Level Calculus II

A more challenging continuation of a single-variable calculus for students in mathematics, engineering, and the sciences. Covers integral calculus of real functions of one variable including integration techniques and applications, differential equations, infinite sequences and series, uniform convergence, and Taylor series. The topics covered are similar to those in MAT 127, but theoretical concepts receive greater emphasis and problems of greater depth and scope are considered.

Due to overlapping content, course repeat rules are applicable for MAT 127 and MAT 137.

General Education Requirements: Quantitative Literacy

Prerequisites: C or better in MAT 136 or department permission.

Course Typically Offered: Spring

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.

General Education Requirements:

Prerequisites: A grade of C or better in MAT 127 at the University of Maine or other system campuses. (Students who have transferred an equivalent class to UMaine will need to contact the Math Department for registration and advising where appropriate.)

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.

Due to overlapping content, credit previously earned for MAT 259 and MAT 262 will be removed upon completion of MAT 258. Both grades will appear on the transcript and will be utilized in GPA calculations. (Not open to students who have already taken MAT 262 or MAT 259.)

General Education Requirements:

Prerequisites: Grade of C or better in MAT 127 at UM or other system campus. Students with prior credit for MAT 259 and/or MAT 262 who nonetheless wish to enroll in MAT 258 should contact the Math Department.

Course Typically Offered: Fall and Spring

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.) Due to overlapping content, credit previously earned for MAT 258 will be removed upon completion of MAT 259. Both grades will appear on the transcript and will be utilized in GPA calculations.

General Education Requirements:

Prerequisites: A grade of C or better in MAT 228. Students with prior credit for MAT 258 who nonetheless wish to enroll in MAT 259 should contact the Math Department.

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: Writing Intensive

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.

Due to overlapping content, credit previously earned for MAT 258 will be removed upon completion of MAT 262. Both grades will appear on the transcript and will be utilized in GPA calculations.

General Education Requirements:

Prerequisites: C or better in MAT 127. Students with prior credit for MAT 258 who nonetheless wish to enroll in MAT 262 should contact the Math Department.

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.

General Education Requirements:

Prerequisites: Permission of department.

Course Typically Offered: Not Regularly Offered

Credits: 1-3

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.

General Education Requirements:

Prerequisites: A grade of C or better in MAT 261 or permission.

Course Typically Offered: Fall

Credits: 1

MAT 345 - History of Mathematics

Offers an overview of the history of mathematics with an emphasis on the development of mathematical ideas. Designed to foster an understanding of the expression of mathematical ideas in a variety of different cultural contexts as well as an appreciation of the roots of modern mathematics.

General Education Requirements: Western Cultural Tradition

Prerequisites: A grade of C or better in either MAT 261 or two MAT/STS classes numbered strictly higher than 228, or Department permission.

Course Typically Offered: Spring

Credits: 3

MAT 362 - Linear Algebra II

A second course on linear algebra with a greater emphasis on theory and proofs than MAT 262. Topics include abstract vector spaces, linear maps, matrices, determinants, eigenvalues and eigenvectors, inner product spaces, and Jordan normal form.

General Education Requirements:

Prerequisites: A grade of C or better in MAT 258 or MAT 262, or departmental permission

Course Typically Offered: Fall and Spring

Credits: 3

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.

General Education Requirements:

Prerequisites: Permission of department.

Course Typically Offered: Fall and Spring

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: Capstone

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.

General Education Requirements:

Prerequisites: A grade of C or better in MAT 228 and MAT 261.

Course Typically Offered: Fall

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.

General Education Requirements:

Prerequisites: A grade of C or better in MAT 425.

Course Typically Offered: Variable

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.

General Education Requirements:

Prerequisites: A grade of C or better in MAT 258 or MAT 259 or permission.

Course Typically Offered: Variable

Credits: 3

MAT 452 - Complex Analysis

An introduction to functions of complex variables including differentiation, integration, series, mappings and applications.

General Education Requirements:

Prerequisites: A grade of C or better in MAT 228.

Course Typically Offered: Spring

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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: A grade of C or better in MAT 261 or permission.

Course Typically Offered: Variable

Credits: 3

MAT 471 - Differential Geometry

The application of multivariable calculus to the study of curves, surfaces and their higher-dimensional analogues.

General Education Requirements:

Prerequisites: A grade of C or better in MAT 228 and in either MAT 258 or MAT 262.

Course Typically Offered: Variable

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.

General Education Requirements:

Prerequisites: A grade of C or better in MAT 228 or permission.

Course Typically Offered: Not Regularly Offered

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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: A grade of C or better in MAT 127 or permission.

Course Typically Offered: Not Regularly Offered

Credits: 3

Mechanical Engineering

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. (Pass/Fail Grade Only.)

General Education Requirements:

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. Lec (1 hour), Lab (2 hours)

General Education Requirements:

Prerequisites: MEE major or permission

Course Typically Offered: Fall

Credits: 2

MEE 125 - Computational Tools for Mechanical Engineers

Introduces the student to computational tools used by mechanical engineers. Students are exposed to computational software platforms common in academic and professional environments. Approximately one quarter of the course is dedicated to spreadsheets and symbolic math. The remainder of the course focuses on programming techniques and examples relevant to mechanical engineering.

General Education Requirements:

Prerequisites: MEE Major or permission

Corequisites: MAT 126

Course Typically Offered: Spring

Credits: 3

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.

General Education Requirements:

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.

General Education Requirements:

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

General Education Requirements:

Prerequisites: MEE 125 or COS 220 or ECE 177 or equivalent; and a grade of C or better in MEE 230.

Course Typically Offered: Fall and 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.

General Education Requirements:

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

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: A grade of C or better in MEE 230 and in MEE 251.

Course Typically Offered: Fall and Spring

Credits: 3

MEE 330 - Manufacturing Engineering

An introduction to manufacturing science and engineering for the product development cycle. The interplay between part design, various manufacturing processes and final mechanical properties will be studied and analyzed.

General Education Requirements:

Prerequisites: MEE 120

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. Practice in writing organized reports to communicate clearly the objectives, methods, results, and conclusions of experimental work.

General Education Requirements: Writing Intensive

Prerequisites: MAT 258 and a grade of C or better in MEE 251.

Corequisites: MEE 360

Course Typically Offered: Spring

Credits: 3

MEE 348 - Introduction to Flight

Students will be introduced to basic principles of powered flight, with focus on fixed-wing heavier-than-air aircraft. Emphasis will be placed on aircraft anatomy, aerodynamics and airfoil analysis, stability, and propulsion.

General Education Requirements:

Prerequisites: MAT 127, PHY 121, and MEE 125 (or equivalent)

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.

General Education Requirements:

Prerequisites: A grade of C or better in MEE 230 and in MEE 270

Corequisites: MAT 258 or MAT 259

Course Typically Offered: Fall and Spring

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. Rec 3.

General Education Requirements:

Prerequisites: ECE 209, MAT 258, and a grade of C or better in MEE 270.

Course Typically Offered: Fall and Spring

Credits: 3

MEE 380 - Design I

Kinematical design of machines. Rec 3.

General Education Requirements:

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

General Education Requirements:

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 for at least 10 weeks (400 hours) with a company, government agency, organization, laboratory, research group or research center. This can include engineering work at an academic institution, including UMaine.

General Education Requirements:

Prerequisites: Permission

Course Typically Offered: Fall, Spring and Summer

Credits: 3

MEE 430 - Digital Manufacturing

Digitalization of manufacturing (DM) is applicable in every industrial sector, and can bring a new paradigm of knowledge-based production and manufacturing. DM is driven by the application and standardization of information and communication technologies and the increasing demand for greater efficiency of operations. The course focuses on various components of DM and their interplay; design and manufacturing information type, their collection, analysis, and utilization. Additionally, additive manufacturing or 3D printing (3DP), a popular tool for DM implementation, will be covered. The topics include process science, material characterization, part characterization, and the economic impact of 3DP.

General Education Requirements:

Prerequisites: MEE 120 and MEE 330

Course Typically Offered: Spring

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.)

General Education Requirements:

Prerequisites: MAT 258 and MEE 360.

Course Typically Offered: Fall

Credits: 3

MEE 433 - Solar-Thermal Engineering

Applied analysis and design of thermal devices (non-photovoltaic) using solar radiation as an energy source. Students will learn techniques to estimate the solar resource, which is the amount of solar energy which can be collected at a given time and location. Analysis of basic solar thermal devices, including collectors and thermal energy storage devices, is introduced using basic thermodynamic and heat transfer theory. Analysis and design of complete solar thermal systems, combining multiple devices, is included. Recent developments in solar thermal energy systems, including low-temperature, high-temperature, and thermochemical systems are discussed.

General Education Requirements:

Prerequisites: A grade of C or better in MEE 230.

Course Typically Offered: Not Regularly Offered

Credits: 3

MEE 441 - Manufacturing and Testing of Composites

An introduction to the manufacturing and material property determination of fiber reinforced polymer (FRP) materials. Includes fabrication, post-processing, and testing of thermoset and thermoplastic composite materials.

General Education Requirements:

Prerequisites: MEE 251 or MEE 252 or MET 219 or permission of the instructor

Course Typically Offered: Alternate Years

Credits: 3

MEE 442 - Mechanical Laboratory II

A continuation of MEE 341. Mechanical engineering problems in a laboratory setting. (Fall) Lab 3.

General Education Requirements:

Prerequisites: 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.

General Education Requirements:

Prerequisites: MEE 442 or permission.

Course Typically Offered: Spring

Credits: 2

MEE 444 - Robot Dynamics and Control

This course introduces the fundamentals of robotics. Topics include planar and spatial transformations and displacements, Euler angles, forward kinematics of robotic manipulators using the Denavit-Hartenberg method, inverse kinematics, velocity and acceleration of robotic manipulators, dynamics of robotic manipulators using Newton-Euler equations, and a review of robot control fundamentals. MEE 444 and MEE 551 cannot both be taken for credit.

General Education Requirements:

Prerequisites: A grade of C or better in MEE 270; and MEE 380

Course Typically Offered: Not Regularly Offered

Credits: 3

MEE 448 - Aircraft Design

The conceptual design of an aircraft to satisfy given specifications, including elements of initial sizing, geometry selection (or vehicle configuration), aerodynamics, propulsion integration, stability and control, loads, structures, manufacturability, and cost analysis. Students will apply design skills in a semester long design project.

General Education Requirements:

Prerequisites: MEE 251, MEE 348 or permission

Course Typically Offered: Not Regularly Offered

Credits: 3

MEE 449 - Aircraft Performance

Performance of fixed wing aircraft, including the equations of motion, basic aerodynamics, and level flight, climb and descent, range, endurance, take off and landing, turning and energy state performance. Fundamentals of longitudinal stability and control.

Prerequisites: MEE 348 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.

General Education Requirements:

Prerequisites: A grade of C or better in MEE 251

Course Typically Offered: Not Regularly Offered

Credits: 3

MEE 452 - Aircraft and Automobile Structures

Introduction to aircraft and automobile structures. Structural mechanics of thin-walled stiffened and unstiffened members. Analysis and design of single and multi-cell structures under torsion, bending, shear, and combined loading conditions. Instability and failure analysis of thin-walled columns and stiffened panels. Energy absorption in single multi-cell tubular members.

General Education Requirements:

Prerequisites: MEE 251

Course Typically Offered: Not Regularly Offered

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 photo elasticity. Lec 2, Lab 2.

General Education Requirements:

Prerequisites: A grade of C or better in MEE 251.

Course Typically Offered: Not Regularly Offered

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.

General Education Requirements:

Prerequisites: A grade of C or better in MEE 251.

Course Typically Offered: Not Regularly Offered

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.

General Education Requirements:

Prerequisites: MAT 258 and a grade of C or better in MEE 251.

Course Typically Offered: Spring

Credits: 3

MEE 459 - Engineering Optimization

Introduction to mathematical optimization theory. Analytical, graphical, and numerical approaches for solving unconstrained or constrained optimization problems involving linear or nonlinear functions. Application of optimality criteria and mathematical programming techniques to problems involving multiple design variables.

Students who have completed MEE 459 with a passing grade are not eligible to take MEE 559 or vice versa.

General Education Requirements:

Prerequisites: MAT 228 and MAT 258

Course Typically Offered: Not Regularly Offered

Credits: 3

MEE 462 - Dynamics of Fluid Flow

Develop an understanding of fundamental concepts in fluid mechanics including analytical solution of Navier-Stokes equation, boundary layer theory, potential flow and compressible flow. Emphasis is on mathematical formulation, problem solving, and engineering applications as well as on developing physical insights into fluid flow.

General Education Requirements:

Prerequisites: MEE 360

Course Typically Offered: Fall

Credits: 3

MEE 463 - Applied Computational Fluid Dynamics

The course is designed for students with no or little computational fluid dynamics (CFD) knowledge who want to learn CFD application to solve mechanical engineering and aerospace engineering problems. The course provides an introduction to the theoretical fundamentals as well as the use of commercial CFD codes to analyze flow and heat transfer in practical engineering problems. The students will understand the process of developing a geometrical model of the flow, applying appropriate boundary conditions, specifying solution parameters and visualizing the results. They will also learn to assess the accuracy of CFD solutions.

General Education Requirements:

Prerequisites: MEE 360 or equivalent

Course Typically Offered: Spring

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. Rec 3.

General Education Requirements:

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.)

General Education Requirements:

Prerequisites: Prerequisites: MET 236, MET 433, PHY 462 or a grade of C or better in MEE 230; CHY 121 or permission

Course Typically Offered: Spring

Credits: 3

MEE 477 - Introduction to Structural Dynamics

Introduction to the fundamental and applied aspects of structural dynamics. Axial, flexural and torsional vibration characteristics of continuous structural members and machine elements using analytical and numerical methods. Finite element analysis of the steady state and transient response of structural elements and systems. Application of theoretical and numerical techniques to the dynamic analysis of mechanical and aerospace structural members.

Prerequisites: MEE 251, MEE 270, MEE 370 and MAT 258 or by permission

Course Typically Offered: Fall and 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.

General Education Requirements:

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 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.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: MEE 231.

Course Typically Offered: Not Regularly Offered

Credits: 3

MEE 487 - Capstone Design I

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 when taken in series with MEE 488. Neither course alone satisfies the requirement.

Prerequisites: MEE 360 and MEE 381 or permission

Corequisites: MEE 370 or permission

Course Typically Offered: Fall

Credits: 4

MEE 488 - Capstone Design II

Design of mechanical engineering systems, including problem definition, analysis, synthesis and optimization.

General Education Requirements: Satisfies the General Education Capstone Experience Requirement when taken in series with MEE 487. Neither course alone satisfies the requirement.

Prerequisites: MEE 487

Course Typically Offered: Spring

Credits: 3

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.

General Education Requirements:

Prerequisites: MEE 360 and MEE 380 or Permission of Instructor.

Course Typically Offered: Not Regularly Offered

Credits: 3

MEE 490 - Modern Control Theory and Applications

This course introduces state-space methods for analysis and design of linear control systems. The assumed prerequisites are undergraduate courses in linear algebra and dynamic systems and controls. The analysis part of this course is concerned with stability, controllability, observability, realization, and minimality of the state-space model, while the control design part delves into the methods of pole placement for state feedback and observer design, and optimal methods such as linear quadratic regulator (LQR) and Kalman filter. Students will also learn how to apply the theory to engineering problems using MATLAB for both continuous-time and discrete-time systems.

General Education Requirements:

Prerequisites: MEE 370

Course Typically Offered: Spring

Credits: 3

MEE 491 - Offshore Wind Farm Engineering

This course introduces the basics of offshore wind farm engineering and design. A broad introduction is provided on the topics of offshore climate, turbine selection criteria, substructure design, installation processes, operation, maintenance, electrical infrastructure, environmental impacts, and decommissioning aspects of offshore wind farms. The basic theory together with state-of-the-art industrial practices and future technologies driving the offshore wind farm development will be addressed.

MEE 491 and MEE 591 cannot both be taken for credit.

Prerequisites: MEE 251 and MEE 360 or permission

Course Typically Offered: Fall

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.

General Education Requirements:

Prerequisites: Permission.

Course Typically Offered: Not Regularly Offered

Credits: 1-3

Mechanical Engineering Technology

MET 100 - Introduction to Mechanical Engineering Technology

Students will cover topics relevant to succeeding as a MET student and graduate. Lec 1, Lab 2. Students who take MET 100 after MEE 101 will only receive credit and grade for MET 100.

General Education Requirements:

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.)

General Education Requirements:

Prerequisites: MET 121 or MEE 120 and MAT 122 or a passing score on the UM Math Placement Exam and Mechanical Engineering Technology Majors or permission

Course Typically Offered: 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. Students who take MET 121 after MEE 120 will only receive credit and grade for MET 121.

Must have a PC (not Mac) laptop that will run Solidworks software

General Education Requirements:

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 312. Topics include: pictorial drawings, descriptive geometry, CADD, design process, dimensioning, tolerancing, fasteners, details, and assembly drawings. Lec and Lab 4. (Spring)

General Education Requirements:

Prerequisites: MET 121 and MET 107 or Junior Standing and MET 107 as a corequisite.

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. Students who take MET 150 after MEE 150 will only receive credit and grade for MET 150.

General Education Requirements:

Prerequisites: MET 121, PHY 107 or PHY 121, and MAT 122 or a passing score on the UM Math Placement Exam.

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.

General Education Requirements:

Prerequisites: MET 107 and MET 121, or permission.

Course Typically Offered: Fall

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 3. Students who take MET 219 after MEE 251 will only receive credit and grade for MET 219.

General Education Requirements:

Prerequisites: MET 150

Corequisites: MAT 127

Course Typically Offered: Fall

Credits: 3

MET 220 - Selected Topics in Mechanical Engineering Technology I

Topics in engineering technology not regularly covered in other courses. Content varies to suit the needs of individuals. May be repeated for credit.

General Education Requirements:

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. Students who take MET 233 after MEE 230 will only receive credit and grade for MET 233.

General Education Requirements:

Prerequisites: PHY 108 or PHY 112 or PHY 122

Corequisites: MAT 116 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.

General Education Requirements: Writing Intensive

Prerequisites: MET219 or MEE 251 and MET 233 or MEE 230

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. Students who take MET 236 after MEE 231 will only receive credit and grade for MET 236.

General Education Requirements:

Prerequisites: MET233 or MEE 230, and MAT 126

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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

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. Students who take MET 317 after MEE 270 will only receive credit and grade for MET 317.

General Education Requirements:

Prerequisites: MET 150 or CET 413 and MAT 117 or MAT 127

Course Typically Offered: Fall

Credits: 3

MET 320 - Selected Topics in Mechanical Engineering Technology II

Topics in engineering technology not regularly covered in other courses. Content varies to suit the needs of individuals. May be repeated for credit.

General Education Requirements:

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.

General Education Requirements:

Corequisites: MET 317

Course Typically Offered: Spring

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. Students who take MET 325 after MEE 360 will only receive credit and grade for MET 325.

General Education Requirements:

Prerequisites: MET 233, MET 317, and MAT 258

Course Typically Offered: Spring

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. Lec 2, Lab 2. Students who take MET 355 after MEE 320 will only receive credit and grade for MET 355.

General Education Requirements:

Prerequisites: CHY 121, MET 219, MET 234, Mechanical Engineering Technology major with junior standing.

Course Typically Offered: Spring

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.

General Education Requirements:

Prerequisites: MET 233 or MET 433

Course Typically Offered: Spring

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. (Pass/Fail Grade Only.)

General Education Requirements:

Prerequisites: MET 234, junior standing and Permission

Course Typically Offered: Fall, Spring, Summer

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.

General Education Requirements:

Prerequisites: PHY 107 or PHY 111 or PHY 121 and MAT 117 or MAT 127

Course Typically Offered: Fall

Credits: 3

MET 440 - Lean Six Sigma

An introduction to Lean Manufacturing and Six Sigma continuous improvement methodologies via lectures, independent assignments, and in-class experiments using discipline-independent processes. Topics will include the 8 forms of waste; value stream maps; the DMAIC model; Gage R&R; hypothesis testing; Ishikawa diagrams; and Design of Experiments (DOE). If this course was taken under as a topics course in MET 320 it cannot be repeated for credit.

General Education Requirements:

Prerequisites: MAT 127

Course Typically Offered: Spring

Credits: 3

MET 451 - Plastics Manufacturing

An introduction to the manufacturing, post-processing, and material property determination of thermoplastic and thermoset polymers. Includes post-processing and joining of plastics and the use of adhesives.

General Education Requirements:

Prerequisites: MET 219 and Junior Standing

Course Typically Offered: Fall, Alternating years

Credits: 3

MET 453 - Experimental Mechanics

An introduction to experimental methods for measuring strain and deformation of engineering materials, structures, and mechanical components. Topics will include electrically and optically recorded strain and deformation; computer data acquisition and reduction techniques; applications to static and dynamic events, sensors, fatigue, fracture and residual stresses; quasi-static load frames.

General Education Requirements:

Prerequisites: MET 234

Course Typically Offered: Fall, Alternating Years

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. Lab 2

General Education Requirements:

Prerequisites: MET 219 or MEE 251 and MAT 127

Course Typically Offered: Spring

Credits: 4

MET 463 - Design II

Continuation of MET 462 including drive components, welded connections, lubrication, bearings, gearing, miscellaneous machine elements and engineering materials. Lec 3.

General Education Requirements:

Prerequisites: MET 462.

Course Typically Offered: Fall

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.

General Education Requirements: Satisfies the General Education Capstone Experience Requirement when combined with the successful completion of 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. Lec 3

General Education Requirements: Satisfies the General Education Capstone Experience when combined with the successful completion of 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.)

General Education Requirements:

Prerequisites: Prerequisites: CHE 385, MET 236, MET 433, PHY 462 or a grade of C or better in MEE 230; CHY 121 or Permission

Course Typically Offered: Spring and Summer

Credits: 3

Mental Health Rehabilitation

MHR 200 - Behavioral & Community Mental Health Systems

This course will review systems of care provided by the state, as well as those provided by for-profit and not-for-profit entities, to serve the needs of behavioral health consumers. Essential components of this course include addressing contemporary public and social policy and social services provision within those policies including fundamentals of behavioral health care, child protection, and welfare systems. In addition, the course examines the history and impact of laws and regulatory standards that dictate these policies and ultimately service provision in behavioral care for children, adults and the elderly. Both current practices and historical precedent are woven into a model represented in both its completeness and contradictions.

General Education Requirements:

Prerequisites: PSY 100 or permissive of instructor

Course Typically Offered: Variable

Credits: 3

MHR 205 - Introduction to Counseling Skills

This course introduces students to the basic skills required for counseling. Students will practice implementing these skills during counseling role plays in class, as well as providing their peers with positive and constructive feedback at the conclusion of the role plays. The ability to utilize feedback and be reflective will be emphasized. This course will also review ethical issues associated with counseling and the role of supervision. Psychodynamic, Behavioral, Person-Centered, Cognitive and Family Systems Counseling Theories, as well as Motivational Interviewing will be introduced.

General Education Requirements:

Prerequisites: MHR 200 or permission of instructor; MHR 200 may be taken as a co-requisite

Course Typically Offered: Variable

Credits: 3

MHR 210 - Vocational Aspects of Disability and Psychiatric Rehabilitation

This course will address the notion of psychiatric rehabilitation via a range of services to support people with psychiatric and other disabilities, in a holistic fashion, noting the conceptual practice of psychosocial rehabilitation as a core organizing principle underlying all behavioral health care. Core philosophies are examined, including historical and current theories and practices, noting the use of contemporary effective practices which are key to current psychiatric rehabilitation. Since employment is a key part of rehabilitation, the course will focus on vocational rehabilitation. Skills for evaluating and assessing the vocational impact of a disability and effective strategies for promoting client understanding and access to community resources will be addressed.

General Education Requirements:

Prerequisites: MHR 200 or permission of instructor

Course Typically Offered: Alternate Years

Credits: 3

MHR 300 - Case Management

This course introduces students to case management as it is utilized in the health and human services fields. Case management is a process of assessing a client's needs, and planning and facilitating their connections with health and human services and other resources. Case management includes education, advocacy and networking with providers and services across many disciplines. This course will introduce students to the skills and responsibilities central to case management, as well as professional, legal, and ethical issues that impact this service. This course partially satisfies Maine MHRT/C Certification competencies.

General Education Requirements:

Prerequisites: MHR 200 or permission of instructor

Course Typically Offered: Variable

Credits: 3

MHR 305 - Trauma, Crisis and Recovery

This course introduces students to concepts of trauma and crisis, as well as resiliency and recovery. The psychological term trauma describes significant events that are usually devastating, life-threatening and shocking. Traumatic events can have ongoing impacts on people's thinking, feeling and behavior. This course will include information of types of traumatic experience (i.e. assault, sexual abuse, motor vehicle accidents, combat or natural disaster), basic knowledge and skills used in assessment and screening of trauma, and an overview of services and supports for people who have experienced trauma. Historical, social and cultural factors which impact our understanding of trauma will also be addressed, as well as trauma's social and physiological impact on individuals. This course will also cover the process of going into crisis and strategies for responding to the person in crisis, as well as understanding the role and scope of crisis response services. Though anyone can go into crisis under a particularly stressful or shocking circumstance, people with significant trauma histories are at high risk for going into crisis.

General Education Requirements:

Prerequisites: MHR 200 or permission of instructor

Course Typically Offered: Alternate Years

Credits: 3

MHR 310 - Counseling Diverse Populations

This counseling course is designed to help the student acquire the skills necessary to become a culturally competent mental health or social service practitioner, that is, someone who is sensitive to cultural differences and to their impact on human interactions. The course is based on the fundamental premise that cultural competence is an ongoing and multi-layered process working at personal, interpersonal, and organization-wide levels. Topics to be addressed include skills to increase cultural awareness and understanding skills to foster effective interpersonal communication and organizational change strategies. Studies will learn to identify and understand culture as it operates on different social levels (class, ethnicity, gender, sexual orientation). Students will also learn to identify the barriers to effective communication and positive relationships including how culture may be a barrier.

General Education Requirements:

Prerequisites: MHR 200 and MHR 205 or permission of instructor

Course Typically Offered: Alternate Years

Credits: 3

MHR 315 - Substance Use and Dual Diagnosis Counseling

This course is an overview of different treatment models for chemical dependency and dual diagnosis treatment. Chemical dependency for the purposes of this course will include diagnoses of substance abuse and dependence for alcohol, street drugs and abused prescription medication. Dual diagnosis in this context refers to having both a mental health diagnosis (i.e. depression, anxiety, ADHD, bipolar disorder) and a substance abuse or dependence disorder. Students will be reviewing the history and development of dual diagnosis treatment and learning about screening, assessment and basic treatment models, as well as understanding the current array of services for chemical dependency. Students will also learn how to identify state board requirements for becoming a Certified Drug and Alcohol Counselor (CADC) and Licensed Drug & Alcohol Counselor (LADC), as well as the requirements to qualify and register for the professional exams.

General Education Requirements:

Prerequisites: MHR 200 and MHR 205 or permission of the instructor.

Course Typically Offered: Fall

Credits: 3

Military Science & Leadership

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.)

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

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.)

General Education Requirements:

Corequisites: MSL 100

Course Typically Offered: Fall & Spring

Credits: 1

MSL 201 - Leadership and Decision Making

This course focuses on the Adaptability Army Learning Area. Students are exposed to critical and creative thinking scenarios where they will be required to find innovative solutions to problems through Troop Leading Procedures (TLP). The Army Profession is also stressed through leadership forums and a leadership self-assessment. No military obligation associated with this course.

General Education Requirements:

Prerequisites: MSL 100, MSL 101, MSL 102 (with exceptions)

Course Typically Offered: Fall & Spring

Credits: 2

MSL 202 - Army Doctrine and Development

The course focuses on the Adaptability Army Learning Area. Students are exposed to critical and creative thinking scenarios where they will be required to find innovative solutions to problems through Troop Leading Procedures (TLP). The Army Profession is also stressed through leadership forums and a leadership self-assessment. No military obligation associated with this course.

General Education Requirements:

Prerequisites: MSL 100, 101, 102 (with exceptions)

Course Typically Offered: Spring

Credits: 2

MSL 301 - Training Management and the Warfighting Functions

Focuses on Training Management and the Warfighting Functions. It is an academically challenging course where commissioned students study, practice and apply the fundamentals of Training Management and how the Army operates through the Warfighting Functions. At the conclusion of this course, the student will be capable of planning, preparing and executing training for a squad conducting small unit tactics. This course includes one lab per week using peer facilitation overseen by MSL IV's, supervised by ROTC Cadre.

General Education Requirements: Western Cultural Traditional

Prerequisites: Permission

Course Typically Offered: Fall & Spring

Credits: 3

MSL 302 - Training Applied Leadership in Small Unit Operations

Focuses on applied leadership in small unit operations. It is an academically challenging course where the commissioned student will study, practice, and apply the fundamentals of direct level leadership and small unit tactics at the platoon level. At the conclusion of the course, the commissioned students will be capable of planning, coordinating, navigating, motivating and leading a platoon in the execution of a mission. This course includes a lab per week using peer facilitation overseen by MSL IV's, supervised by ROTC Cadre. Successful completion of this course will help prepare the commissioned student for the Cadet Summer Training Advance Camp they will attend during the summer at Fort, Knox, KY.

General Education Requirements: Cultural Diversity and International Perspectives and Ethics

Prerequisites: Permission

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: Western Cultural Tradition and Social Contexts and Institutions

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 and International Perspectives

Prerequisites: Permission

Course Typically Offered: Summer

Credits: 3

MSL 401 - The Army Officer

This course focuses on development of the Army Officer. It is an academically challenging course where one will develop knowledge, skills, and abilities to plan, resource, and assess training at the small unit level. The student will also learn about Army programs that support counseling subordinates and evaluating performance, values, and ethics, career planning, and legal responsibilities. At the conclusion of this course, students will be familiar with how to plan, prepare, execute, and continuously assess the conduct of training at the company or field grade officer level. This class includes a lab per week which the student will oversee MSL III lesson facilitation and supervised by ROTC Cadre.

General Education Requirements: Social Contexts and Institutions', 'Ethics and Writing Intensive

Prerequisites: MSL 301 and MSL 302

Course Typically Offered: Fall

Credits: 4

MSL 402 - Company Grade Leadership

This course is an academically challenging course where students develop knowledge, skills, and abilities required of Junior Officers pertaining to the Army in Unified Land Operations and Company Grade Officer roles and responsibilities. This course includes reading assignments, homework assignments, small group assignments, briefings, case studies, practical exercises, a mid-term exam, and an Oral Practicum as the final exam. The Oral Practicum explores the student's knowledge of how they will be prepared for the Army Warfighting Challenges (AWFC) covered throughout the ROTC Advanced Course. Successful completion of this course will assist in preparing the cadet for the Basic Officer Leadership Course (BOLC B) and is a mandatory requirement for commissioning. This course includes a lab per week overseeing MSL III lesson facilitation and supervised by ROTC Cadre.

General Education Requirements: Cultural Diversity and 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: Social Context and Institutions

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.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: By permission of the Professor of Military Science.

Course Typically Offered: Spring and Fall

Credits: 3

Modern Languages and Classics

MLC 110 - From Cacao to Chocolate

This course takes a multi-disciplinary approach to chocolate as a common thread in French and Spanish-speaking cultures. Faculty from Anthropology, French, and Spanish provide insight into the role of chocolate from its earliest use in Latin America and its reflection in Peruvian folklore, to its symbolization of sensuality and magic in literature and film, to its current presence in everyday life (i.e. popular culture) in France, Spain, and Peru. Also in the present day, we will look briefly at concerns within the context of these cultures pertaining to the environment and social issues such as equality and education as they relate to the cultivation chocolate.

General Education Requirements: Western Culture Traditions

Course Typically Offered: Fall

Credits: 1

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: Cultural Diversity and International Perspectives

Course Typically Offered: Fall & Spring

Credits: 1-3

MLC 210 - Introduction to Modern Languages

This course familiarizes students with fundamental questions of human language - what language is and how it works. This course studies where the modern languages come from, how they are related to one another and to ancient languages, and what happens when languages come into contact with one another. It serves as a basic introduction to linguistics as well as a primer in cultural and linguistic difference. Class note: No prior knowledge of languages other than English is required or expected.

General Education Requirements: Western Cultural Tradition

Course Typically Offered: Fall

Credits: 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.

General Education Requirements:

Prerequisites: An appropriate level of fluency as determined by the department.

Course Typically Offered: Variable

Credits: 1 - 12

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: Cultural Diversity and International Perspectives

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: Cultural Diversity and International Perspectives

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: Cultural Diversity and International Perspectives

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: Cultural Diversity and International Perspectives

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: Cultural Diversity and International Perspectives

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: Cultural Diversity and International Perspectives

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: Cultural Diversity and International Perspectives

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: Cultural Diversity and International Perspectives

Prerequisites: 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: Cultural Diversity and International Perspectives

Prerequisites: VOX 101 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: Cultural Diversity and International Perspectives

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: Cultural Diversity and International Perspectives

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: Cultural Diversity and International Perspectives

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: Cultural Diversity and International Perspectives

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: Cultural Diversity and International Perspectives

Prerequisites: VOX 110 and Permission of Coordinator of Critical Language Program.

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: Cultural Diversity and International Perspectives

Prerequisites: VOX 137 and Departmental Consent

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: Cultural Diversity and International Perspectives

Prerequisites: 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: Cultural Diversity and International Perspectives

Prerequisites: VOX 137 and Permission

Course Typically Offered: Variable

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: Cultural Diversity and International Perspectives

Prerequisites: Permission

Course Typically Offered: Variable

Credits: 3

Music

MUS 100 - Recital Laboratory

Experience in recital performance and in listening to performances of one's peers. May be repeated. Lab 1.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

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 150 - Majoring in Music

This course is intended to help first year music students during their first semester adjust to being in college in the School of Performing Arts at The University of Maine and the School of Performing Arts resources and develop skills designed to achieve success. Students will learn about their intended major, be introduced to department faculty and resources, set semester, year and career goals, and have an opportunity to practice performance skills in the performance space prior to their second semester required recital lab, and to learn more about their chosen profession of music.

General Education Requirements:

Prerequisites: Music Major Only

Course Typically Offered: Fall

Credits: 1

MUS 201 - Applied Music Lessons

Applied music lessons. May be repeated for credit. Note: course topic number designates instrument or voice.

General Education Requirements: Artistic and Creative Expression

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. Applied Music 1-2.

General Education Requirements: Artistic and Creative Expression

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.

General Education Requirements: Artistic and Creative Expression

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.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: Required for all piano majors and open to other pianists by permission.

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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

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: Capstone Experience

Prerequisites: Senior standing. Required for all BA in Music majors.

Course Typically Offered: Fall & Spring

Credits: 3

Music Education

MUE 207 - Voice Class

The systematic development of the principles of good singing through class method approach.

Prerequisites: Music Education major or permission.

Course Typically Offered: Fall

Credits: 2

MUE 209 - String Class

Basic performance and pedagogical skills pertaining to each of the four string instruments. Lab 4.

General Education Requirements:

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: Ethics

Prerequisites: Open to all music majors and Department consent

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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: Music Education major or permission.

Course Typically Offered: Spring

Credits: 2

MUE 320 - General Music Methods: 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 students with special needs.

General Education Requirements:

Prerequisites: MUL 202, MUY 212, and MUE 210

Course Typically Offered: Fall

Credits: 3

MUE 321 - General Music Methods: 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 students with special needs.

General Education Requirements:

Prerequisites: MUE 320, MUL 202, MUY 212, and MUE 210

Course Typically Offered: Spring

Credits: 3

MUE 401 - Organization and Administration of Secondary Music Performance Programs

This course will cover the organization, scheduling, and feeder-system techniques of beginning band, choral, and orchestral programs through high-school level instruction. Areas of study will include curriculum, pedagogical techniques, organization of space and materials, budgeting, materials acquisition, assessment, music education philosophy, finding employment, and interview techniques.

General Education Requirements:

Prerequisites: MUE 209, MUE 213, MUE 217, MUE 222 and MUP 340

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.

General Education Requirements:

Prerequisites: Music Education majors with sophomore standing.

Course Typically Offered: Fall

Credits: 1

Music History

MUH 150 - History of Jazz

The History of Jazz explores the origin and development of the improvised American form of music popularly known as Jazz. Special emphasis will be placed on African-American culture-including African traditions- in its broader historical context; how this culture, interacting with the many and diverse elements of American and (imported) European general and musical cultures, led to the development of Jazz. The course will cover its social, as well as the artistic significance. We will study and analyze various Jazz styles; especially through recorded and historical film and video tape, performances by the music's major innovators and practitioners. In addition, we will examine the most relevant and original contributions by members of all the various American ethnic and religious groups which were influenced by and adopted/adapted African-American musical culture. We will also take into consideration, influential on Jazz-related new world phenomena from the Caribbean and Latin America; for example, Afro-Cuban rhythms. Jazz' significant global influence will be discussed, an influence initiated by African-Americans who toured and lived in Europe from the end of WWI to the present. If this course was taken under as a topics course in MUS 298, it cannot be repeated for credit.

General Education Requirements: Cultural Diversity and International Perspectives and Artistic and Creative Expressions

Course Typically Offered: Spring

Credits: 3

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: Writing Intensive

Prerequisites: Music major and MUL 202 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.

General Education Requirements:

Prerequisites: MUL 200 and MUL 202 or permission.

Course Typically Offered: Spring

Credits: 2

Music Literature

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: Artistic and Creative Expression

Course Typically Offered: Fall, Spring, Summer

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: Artistic and Creative Expression

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.

General Education Requirements:

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: Western Cultural Tradition

Prerequisites: MUL 101 or permission.

Course Typically Offered: Fall

Credits: 3

Music Organizations and Ensembles

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: Artistic and Creative Expression

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: Artistic and Creative Expression

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: Artistic and Creative Expression

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: Artistic and Creative Expression

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: Artistic and Creative Expression

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: Artistic and Creative Expression

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: Artistic and Creative Expression

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: Artistic and Creative Expression

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: Artistic and Creative Expression

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: Artistic and Creative Expression

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. Applied Music 1.

General Education Requirements: Artistic and Creative Expression

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: Artistic and Creative Expression

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: Artistic and Creative Expression

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 1.

General Education Requirements: Artistic and Creative Expression

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: Artistic and Creative Expression

Course Typically Offered: Fall & Spring

Credits: 0-1

Music Performance

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.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: Music majors only.

Course Typically Offered: Spring

Credits: 1

MUP 215 - Piano Class III

A continuation of MUP 205, MUP 206 designed to complete the proficiency examination in secondary piano. Lab 2.

General Education Requirements:

Prerequisites: MUP 205, MUP 206 or permission. Music majors only.

Course Typically Offered: Fall

Credits: 1

MUP 216 - Piano Class IV

A continuation of MUP 205, MUP 206 designed to complete the proficiency examination in secondary piano. Lab 2.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: 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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: MUP 216, MUY 212, MUY 214 or equivalent level, including completion of piano proficiency requirements.

Course Typically Offered: Fall

Credits: 2

Music Theory

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: Artistic and Creative Expression

Course Typically Offered: Fall, Spring, Summer

Credits: 3

MUY 111 - Elementary Harmony I

Diatonic chordal relationships through written work, analysis, and keyboard application.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: MUY 211.

Course Typically Offered: Spring

Credits: 2

MUY 213 - Advanced Sight Singing and Ear Training I

A continuation of MUY 114.

General Education Requirements:

Prerequisites: MUY 114.

Course Typically Offered: Fall

Credits: 2

MUY 214 - Advanced Sight Singing and Ear Training II

A continuation of MUY 114.

General Education Requirements:

Prerequisites: MUY 213.

Course Typically Offered: Spring

Credits: 2

MUY 310 - Jazz Theory Fundamentals

This course introduces the basic fundamentals of jazz theory, with applications to melodic improvisation, jazz piano techniques, and arranging for small jazz ensembles. It will cover jazz terminology, chord symbols and progressions, scales and modes, ear training, common jazz forms, melodic writing, instrumentation, and basic piano voicings.

General Education Requirements:

Prerequisites: MUY 112 and MUP 206

Course Typically Offered: Fall

Credits: 3

MUY 315 - Twentieth Century Musical Techniques

Techniques for structural analysis of post-impressionist through contemporary music.

General Education Requirements:

Prerequisites: MUY 212 or permission.

Course Typically Offered: Not Regularly Offered

Credits: 2

MUY 410 - Jazz Arranging

The study of arranging for small and large jazz ensembles.

General Education Requirements:

Prerequisites: MUY 310

Course Typically Offered: Fall, Even Years

Credits: 3

MUY 411 - Jazz Piano

The study of jazz keyboard playing in a solo setting, as well as small and large jazz ensembles.

General Education Requirements:

Prerequisites: MUY 310

Course Typically Offered: Spring, Even Years

Credits: 3

MUY 412 - Jazz Pedagogy

This course allows students to build a foundation for teaching jazz music in a school setting and in a private studio. It covers techniques for individual performance and improvisation, as well as arranging for and rehearsing small and large ensembles. Students will gain familiarity with the standard instruments used in a jazz band and learn techniques for helping students use these instruments effectively in a jazz ensemble setting.

General Education Requirements:

Prerequisites: MUY 310

Course Typically Offered: Spring, Odd Years

Credits: 3

MUY 422 - Tonal Counterpoint

A study of contrapuntal techniques as practiced by composers of the 18th and 19th centuries.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: MUY 212 or permission.

Course Typically Offered: Variable

Credits: 2

Native American Studies

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: 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: Social Contexts and Institutions and Cultural Diversity and International Perspectives

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.

General Education Requirements:

Prerequisites: NAS 101 or permission.

Course Typically Offered: Fall & Spring

Credits: 1-3

NAS 202 - Wabanaki Languages I

Provides an interdisciplinary, introductory level of study of selected topics regarding American Indians in more detail and complexity. While there are distinct Indigenous languages of the Native nations that make up the Wabanaki Confederacy, these languages are similar. This course will offer an opportunity for students to begin to build their Wabanaki vocabulary and develop skills in pronunciation and oral communication, as well as discussing the history of Wabanaki words. Taught by a Wabanaki speaker. If this course was taken as a topics course in NAS 201, it cannot be repeated for credit.

General Education Requirements: Cultural Diversity and International Perspectives

Prerequisites: NAS 101 or permission

Course Typically Offered: Fall and Spring

Credits: 3

NAS 203 - Wabanaki Language II

Provides an interdisciplinary, intermediate level of study of selected topics regarding American Indians in more detail and complexity. The course is designed to utilize the basic vocabulary learned in Wabanaki Languages I and begin using phrases and dialogues for conversational interactions. Although the primary languages utilized will be Passamaquoddy and Maliseet, other Wabanaki Languages will be referenced. If this course was taken as a topics course in NAS 201, it cannot be repeated for credit.

General Education Requirements: Cultural Diversity and International Perspectives

Prerequisites: NAS 202 or permission

Course Typically Offered: Spring

Credits: 3

NAS 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: Cultural Diversity and International Perspectives and Social Context and Institutions

Course Typically Offered: Spring

Credits: 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: Population and Environment and Cultural Diversity and International Perspectives

Course Typically Offered: Variable

Credits: 3

NAS 270 - Gender in Native American Cultures

This course explores the concept of gender in indigenous communities of North America. Course materials will explore historical and contemporary perspectives of gender and sexual orientation to better understand how Native communities define and practice gender. NAS 101 or WGS 101 is a recommended prerequisite. (WGS 270 and NAS 270 are identical courses.)

General Education Requirements: Cultural Diversity and International Perspectives and Social Context and Institutions

Course Typically Offered: Spring

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.

General Education Requirements:

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.

General Education Requirements:

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: Cultural Diversity and International Perspectives

Prerequisites: NAS 101, junior standing and permission.

Course Typically Offered: Spring, Summer

Credits: 3

NAS 451 - Native American Cultures and Identities

In this seminar, we will examine Native American cultures and identities (past and present), with special attention to reading works by Native authors and examining topics such as the effects of colonialism on Native Americans, representations of Native Americans in popular culture, new biological technologies like DNA testing that shape understandings of Native identities, the role of traditional cultures in Native communities, tribal sovereignty and economic development in the twenty-first century, and indigenous environmental perspectives.

General Education Requirements: Cultural Diversity and International Perspectives

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.

General Education Requirements:

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

Natural Sciences, Forestry and Agriculture

NFA 117 - First-Year Success Seminar

A course designed to support students as they adjust to life and responsibilities in college and to help students develop skills to achieve success. Provides an introduction to the major and degree requirements, department faculty and staff, career opportunities and other resources for success in the major. Includes orientation to University resources for students. Intended for first-year students but may include transfer students. Course may include field trips during class hours and/or weekends. (Pass/Fail Grade Only.)

General Education Requirements:

Course Typically Offered: Fall

Credits: 1

NFA 118 - ELHS/UMaine Orientation

Orientation to the College of Earth, Life and Health Sciences and the University of Maine. The course will also cover topics to help students succeed academically and engage with the campus community. May also be taken concurrently with NFA 117.

General Education Requirements:

Course Typically Offered: Fall and Spring

Credits: 0-1

Naval Science

NAV 100 - Naval Science Laboratory

Developed to ensure coverage of Professional Core Competency (PCC) objectives not included in formal Naval Sciences courses. Topics deal with general Navy training, naval warfare doctrine, employment of naval forces, joint operations, and midshipmen professional development. (Pass/Fail Grade only).

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

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.)

General Education Requirements: Western Cultural Traditions, Social Context and Institutions

Credits: 3

NAV 301 - Navigation

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.

General Education Requirements:

Course Typically Offered: Fall, Even Years

Credits: 3

NAV 302 - Naval Operations and Seamanship

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 ship handling, 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.

General Education Requirements:

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.

General Education Requirements:

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: Ethics

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: Western Cultural Tradition' , 'Social Contexts and Institutions and Cultural Diversity and International Perspective

Prerequisites: permission of instructor.

Course Typically Offered: Spring

Credits: 3

NAV 411 - Fundamentals of Maneuver Warfare

Fundamentals of Maneuver Warfare: [Replaces NAV 410: Amphibious Warfare] Broad aspects of warfare and their interactions with maneuver warfare doctrine. Focus on the United States Marine Corps as the premier maneuver warfare fighting institution. Historical influences on current tactical, operational, and strategic implications of maneuver warfare practices. Case studies. Enrollment preference to NROTC students.

General Education Requirements:

Prerequisites: Permission of instructor.

Course Typically Offered: Spring

Credits: 3

New Media

NMD 100 - Introduction to New Media

An exploration into the history, concepts, and modern practices of new media. Students will learn what defines new media, what they are, how they are produced, and how they challenge the way we think, create, and relate to our society/environment. This course will examine the benefits that emerging technologies afford, while also considering the challenges and consequences their adoption creates. Topics include computing, the web/internet, media production, digital narrative, microelectronics, additive manufacturing, and ethics in a digital era.

General Education Requirements: Social Contexts and Institutions

Course Typically Offered: Fall

Credits: 3

NMD 104 - New Media Design

An introduction to the principles of digital design. Topics include illustration, graphic design, and image manipulation pertaining to both vector and raster-based imagery. Students will produce hands-on projects for critique such as abstracts, logos, portraits, posters, and digital paintings.

General Education Requirements: Artistic and Creative Expression

Course Typically Offered: Fall

Credits: 3

NMD 105 - Creative Coding I

Introduction to programming as a new media art and design practice. Use of creative processes in programming by writing code to generate images, sound, animations, text, and interactivity. Use of computing environments such as processing for creating and developing software "sketches" that allow visual expression. Understand and control how data is represented in computers (data types and structures), instruct computer how make decisions on the fly (conditionals), how and when to repeat instructions (loops), and structure and organize computer code (functions and objects).

General Education Requirements: Quantitative Literacy

Course Typically Offered: Spring

Credits: 3

NMD 106 - Time-Based Media

An introduction to the principles of digital filmmaking, video, and audio production. Students will learn how to shoot and edit their own footage through a variety of creative projects. Topics include camera operation, field audio, lighting, cinematography, and visual storytelling.

General Education Requirements:

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 will 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.

General Education Requirements:

Course Typically Offered: Spring

Credits: 3

NMD 200 - Designing Humane Tech

Examines the goals and impacts of New Media technologies. Topics include how design choices respond to and influence our bodies, our communities, and our political, economic and ecological systems. Focus on how humane design choices enable us to create a healthier and more sustainable world. A writing intensive class with reading, discussion, writing assignments and conceptual design projects.

General Education Requirements: Writing Intensive

Prerequisites: Sophomore Standing

Course Typically Offered: Fall

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.

General Education Requirements:

Prerequisites: NMD 200

Course Typically Offered: Spring

Credits: 3

NMD 211 - Creative Coding II

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.

General Education Requirements:

Prerequisites: NMD105 or COS 120 or COS 121 or COS 125

Corequisites: NMD 100

Course Typically Offered: Fall

Credits: 3

NMD 212 - Rapid Prototyping

Basic analog and digital electronics, laser cutting and 3D Printing techniques as they apply to New Media art and design framework. Taught via a studio lab format.

General Education Requirements:

Course Typically Offered: Not Regularly

Credits: 3

NMD 245 - Film Criticism and Theory

Students will develop skills in the analysis of form and content so that they will achieve proficiency in the use of film studies vocabulary. Participants will learn to think critically about the media industry and to evaluate film as an art form, individual psychological experience, technology, social text, and commodity. (CMJ 245 and NMD 245 are identical courses.)

General Education Requirements:

Course Typically Offered: Spring

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: Artistic and Creative Expression

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.

General Education Requirements:

Course Typically Offered: Spring

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.

General Education Requirements:

Course Typically Offered: Variable

Credits: 1-3

NMD 306 - Community Collaboration and Development

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 a community client project; the work of each team will culminate in a new media proposal and/or prototype, preparing them for the New Media capstone sequence.

General Education Requirements:

Prerequisites: NMD 200 and NMD 211 and NMD 340 or NMD 341 or NMD 342 or NMD 343 or NMD 344 or NMD 345 or permission

Course Typically Offered: Spring

Credits: 3

NMD 324 - Introduction to Narrative Film Making

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.

General Education Requirements:

Course Typically Offered: Fall

Credits: 3

NMD 340 - Designing and Creating Websites

This course focuses on work with real-world clients to create Web pages or responsive apps with compelling designs and interactive features. A review of basic graphic design, HTML, CSS, simple PHP and web architecture tools like WordPress provides a technical foundation combined with critical skills for collaboration, negotiation and teamwork. Students apply these to tell a digital story that represents community or client values, and then apply the same skills of designing, coding and networking to produce a professional portfolio of their creative work as New Media students.

General Education Requirements:

Prerequisites: Sophomore standing and NMD 104

Course Typically Offered: Spring

Credits: 3

NMD 341 - Documentary Photography 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.

General Education Requirements: Artistic and Creative Expression

Course Typically Offered: Every Year

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.

General Education Requirements:

Prerequisites: NMD 211 or permission

Course Typically Offered: Every Year

Credits: 3

NMD 343 - SL: Digital Narrative Workshop I

Explores emerging forms of digital storytelling and how these new forms transform authorship, audience, interaction and publishing. Students produce their own original narratives using digital storytelling techniques, web based media, and non-linear game-like environments. Team projects and skill sharing encouraged. Field work outside the classroom and publication of a storytelling project for community partners. This course has been designated as a UMaine service-learning course.

General Education Requirements: Artistic and Creative Expressions

Prerequisites: Sophomore Standing

Corequisites: NMD 200

Course Typically Offered: Fall

Credits: 3

NMD 344 - Motion Graphics & Design I

An introduction to motion graphics and design principles. Students will learn how to imbue traditional 2D design with motion and explore different techniques used in professional application.

General Education Requirements:

Prerequisites: NMD 104 and NMD 106 or permission

Course Typically Offered: Spring

Credits: 3

NMD 345 - Web Applications

This class trains students in creating compelling Web designs and interactive Web pages using advanced HTML, CSS, and JavaScript. Although the focus will be designing and scripting for the Web, the class will apply these easy-to-learn techniques to other contexts, such as bookmarklets and browser extensions. In addition to this practical know-how, students in this class learn today's legal and cultural context for sharing, and prototype a creative application of their own choosing.

General Education Requirements:

Prerequisites: NMD 105 and 211 or COS 125 and COS 225, or Permission

Course Typically Offered: Every Year

Credits: 3

NMD 347 - Artificial Intelligence for Art and Design

Introduction to techniques, historical contexts, and conceptual approaches to artificial intelligence as a creative medium. Cognitive science debate on theories of the mind impacts of AI on society as intellectual labor is replaced by algorithms, and the divide between autonomy and authorship in working with AI for artmaking. Introduction to different movements and techniques within AI, such as cybernetics, artificial life, nouvelle AI, expressive AI, neural networks, genetic algorithms, machine learning, and deep learning. Students directly apply understanding in creating original works using different approaches.

General Education Requirements:

Prerequisites: NMD 200 and NMD 211

Course Typically Offered: Not Regularly Offered

Credits: 3

NMD 358 - Documentary Film Criticism and Theory

Centered around the Camden International Film Festival, this course engages students in critically assessing documentary films through an understanding of the genre's history, theoretical foundations, and means of production, aspects particularly relevant in this age of rapidly evolving media. Students will be exposed to various new technologies during the festival on the development, production and distribution of contemporary non-fiction film. Besides periodic class meetings across the semester and four days attendance at the Festival, students will have opportunities to discuss documentaries in public forums and meetings with documentary professionals in seminar conferences. Students will develop in-depth research projects, either developing their own documentaries or writing analytic papers on issues core to the field. If this course was taken under as a topics course in NMD 398, it cannot be repeated for credit.

General Education Requirements:

Course Typically Offered: Fall

Credits: 3

NMD 370 - 3D Modeling and Animation

An introduction to the principles of 3D computer modeling, rendering, and animation for both professional application and multimedia production. The primary software used in this course is Blender.

General Education Requirements: Artistic and Creative Expression

Course Typically Offered: Spring, Alternating

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.

General Education Requirements:

Prerequisites: Department consent.

Course Typically Offered: Not Regularly Offered

Credits: 1-3

NMD 424 - Narrative Film Making

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.

General Education Requirements:

Prerequisites: NMD 324 or 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.

General Education Requirements:

Prerequisites: Department consent.

Course Typically Offered: Variable

Credits: 1-3

NMD 440 - SL: Websites for Clients & Communities

This course builds on the personal portfolio web design skills of NMD 340, and now focuses on work with real-world clients. A review of more advanced graphic design, HTML, CSS, and PHP provides a technical foundation. Meanwhile students work on collaboration, negotiation and teamwork with classmates and outreach with clients. Students apply these technical and personal skills to create professional websites for clients and communities. Clients may hire students for paid internships after the class work is complete to develop more complex websites.

General Education Requirements:

Prerequisites: NMD 340

Course Typically Offered: Fall

Credits: 3

NMD 441 - Documentary Video and Storytelling

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.

General Education Requirements:

Prerequisites: NMD 341 or permission

Course Typically Offered: Spring

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.

General Education Requirements:

Prerequisites: NMD 211 or permission

Course Typically Offered: Every Year

Credits: 3

NMD 443 - Digital Narrative Workshop II

Students explore interactive authorship, seek audience participation, develop interactive environments, and publish final pieces in an online magazine. Exploration and reflection on larger cultural metanarratives, many of which are in the process of transition. Students may continue community partnerships begun in Digital Narrative I, and further develop their projects in reach or in depth. They may also seek alternative ways of either crafting or publishing and sharing community stories, such as through Virtual Museums, Community Archives, Social Media campaigns, or Storytelling peer-to-peer workshops. Final projects will culminate in online publication and/or a community/public audience engagement.

General Education Requirements:

Prerequisites: A grade of C- or better in NMD 343

Course Typically Offered: Spring

Credits: 3

NMD 444 - Motion Graphics & Design II

An exploration into advanced motion design techniques such as rigging, compositing, motion tracking, and special effects. Students will learn how to merge motion graphics and video, allowing for more complex compositions.

General Education Requirements:

Prerequisites: A grade of C- or better in NMD 344

Course Typically Offered: Fall

Credits: 3

NMD 445 - Mobile Applications

Mobile applications have become one of the predominant ways that people interact with each other. Yet designing and developing apps for phones and tablets typically requires a mastery of a half-dozen languages and platforms. This course, by contrast, builds on familiar Web design and development skills taught in NMD 345, Web Applications, to produce a working app for common mobile platforms such as iOS and Android by using a full-stack approach. Students conceive and produce an app that interchanges data with the cloud to offer access to new information or connect people in new ways.

General Education Requirements:

Prerequisites: A grade of C- or better NMD 345

Course Typically Offered: Every Year

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.

General Education Requirements:

Prerequisites: permission of instructor.

Course Typically Offered: Fall, Spring, Summer

Credits: 3

NMD 498 - New Media Capstone I

In this first semester of a two-part course, students conceive and build a complex, self-determined new media project. Students are expected to bring an ambitious yet feasible idea to the course. The first semester emphasizes extensive research, writing, and in-class presentations, followed by a series of working prototypes developed in an iterative fashion. This semester fulfills the Writing Intensive general education requirement. High levels of maturity, creativity, self-discipline and personal organization are expected.

General Education Requirements: 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 - New Media Capstone II

In this second semester of a two-part course, students expand and refine the prototype developed in the first semester. After students test their applications in class and with an outside target audience, the course culminates in a final presentation at year's end. High levels of maturity, creativity, self-discipline and personal organization are expected.

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

Nursing

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.

General Education Requirements:

Course Typically Offered: Fall

Credits: 1

NUR 102 - Foundations of Nursing Practice I

This course is designed to introduce students to professional nursing practice. Offers students the opportunity to apply nursing concepts and attitudes in a collaborative, classroom setting. Students will develop nursing strategies to explore patient centered care, safety, comfort, and communication that will meet the American Association of Colleges of Nursing Essentials for Nursing Education. Guiding course principles include foundations of the nursing profession, quality and safety towards delivering evidence-based healthcare utilizing the nursing process.

General Education Requirements:

Prerequisites: NUR major; BIO 100, BMB 207, BMB 209, and NUR 101

Corequisites: NUR 106

Course Typically Offered: Fall & Spring

Credits: 2

NUR 103 - Foundations of Nursing Practice II

This foundational nursing course expands upon concepts essential to success as a nursing student and professional nurse. The concepts of professionalism, communication and collaboration with interprofessional teams, self-care, diversity, and the nursing process are explored in relation to the role of the student and professional nurse. In addition, concepts including ethics, patient-centered care, evidence-based practice, quality improvement, informatics, safety, nursing theory, and health literacy are also discussed. These concepts will be covered in discussion of both nurses' role in caring for patients, as well as issues related to professional development in nursing.

General Education Requirements:

Prerequisites: Nursing Major; NUR 102, NUR 106, BIO 208, BMB 240 AND BMB 241

Course Typically Offered: Fall and Spring

Credits: 3

NUR 106 - Foundations of Nursing Practice I LAB

This course is designed to introduce fundamentals of nursing practice by applying an evidence-based approach within a laboratory learning environment. Students will develop foundational nursing skills for clinical practice to promote quality-based patient care that aligns with American Association of Colleges of Nursing Essentials for Nursing Education.

General Education Requirements:

Prerequisites: Nursing Major, BIO 100, or both BMB 207 and BMB 209.

Corequisites: NUR 102

Course Typically Offered: Fall and Spring

Credits: 0.5

NUR 150 - Scholarship of Wellness & Mindfulness

This course follows an immersive bridge-week curriculum where students engage in evidence-based practices that integrate artistic and creative practices of mindfulness, yoga, and cooking within a scientific case-based research study focused on their wellness. Students engage and critique the practices through the lens of holistic health and examine their effects on a range of personal quantitative and qualitative health variables. They practice mindfulness and learn about research design and analysis using personal Fitbit data. The course guides the students through the intellectual skill of developing a personal well-being and wellness laboratory report.

General Education Requirements: Artistic and Creative Expression and Quantitative Literacy

Prerequisites: Nursing Major

Course Typically Offered: Fall and Spring

Credits: 1

NUR 160 - Introduction to Human Genetics and Genomics for Health Care Professions

Genomic applications have become increasingly more relevant to the delivery of healthcare across all health settings. This course introduces students to genetic/genomics information in various applications within healthcare. Students are provided an overview of genomic concepts that relate to caring for persons/families/communities and/or populations throughout the lifespan. Students will acquire the knowledge, skills and attitudes required to meet selected core competencies outlined in the Essentials of Genetic and Genomic Nursing: Competencies, Curricula Guidelines and Outcome Indicators. Special emphasis will be given to current events that utilize clinical guidelines and follow evidence-based practice.

General Education Requirements:

Course Typically Offered: Fall & Spring

Credits: 1

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. The course focuses on older adults as vibrant and essential members of society with an emphasis on the health professionals' role in promoting older adult wellness and health. Key recommendations and evidence-based practice from leading geriatric organizations are embedded into the course.

General Education Requirements:

Course Typically Offered: Fall and Spring

Credits: 1

NUR 166 - 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.

General Education Requirements:

Course Typically Offered: Fall and Spring

Credits: 1

NUR 200 - Care of Adults I

This course introduces nursing concepts necessary for novice care of adult clients with selected illness and disease conditions, with the use of the nursing process to promote health and healing. Students apply pathophysiology and health assessment principles to focus nursing assessment and care planning to implement care and evaluate outcomes. Patient-centered care, safety, teamwork and collaboration, and evidence-based practice are highlighted through case studies, active learning tasks, lecture, and discussion.

NOTE: students must have a cumulative Lab/Science GPA of 3.0

General Education Requirements:

Prerequisites: Nursing Major; Minimum grade of C in the following: NUR 102, NUR 103, NUR 106, BIO 100, BIO 208, BMB 207, BMB 209, BMB 240, BMB 241

Corequisites: NUR 201 and NUR 202

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.

Course Note: Overall cumulative GPA 3.0 and cumulative lab/science GPA of 3.0 required.

Prerequisites: Nursing Major; minimum grade of C in the following: NUR 102, NUR 103, NUR 106, BIO 100, BIO 208, BMB 207, BMB 209, BMB 240, BMB 241

Corequisites: NUR 200 and NUR 202

Course Typically Offered: Fall & Spring

Credits: 1.5

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: students must have a cumulative Lab/Science GPA of 3.0

General Education Requirements:

Prerequisites: Nursing major; Minimum grade of C in BIO 100, BIO 208, BMB 207, BMB 209, BMB 240, BMB 241, NUR 102, NUR 103, NUR 106

Corequisites: NUR 200 and NUR 201

Course Typically Offered: Fall and Summer

Credits: 1.5

NUR 203 - Dosage Calculation for Nurses

This course provides the foundation for safe dosage calculation for medication administration. Learners will adapt a standard method to calculate dosages of enteral and parenteral medications including intravenous infusions and methods. Special considerations for pediatrics and older adults will also be addressed. Essential medication delivery mechanisms and mathematics will be emphasized.

General Education Requirements: Quantitative Literacy

Prerequisites: NUR 102, NUR 103, NUR 106, MAT 111 or higher, and STS 132

Course Typically Offered: Fall and Spring

Credits: 1

NUR 214 - Mindfulness-Based Stress Reduction

Mindfulness-Based Stress Reduction (MBSR) is an empirically-supported 8-week psycho-educational group intervention that teaches mindfulness meditation as a health intervention. Created by Dr. Jon Kabat-Zinn in 1979. MBSR offers participants the possibility to develop a different relationship to stress resulting from chronic physical and psychological illnesses. Research outcomes have demonstrated positive improvements in physical and psychological symptoms and changes in health attitudes and behaviors.

General Education Requirements: Artistic and Creative Expression

Course Typically Offered: Fall and Spring

Credits: 2

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.

NOTE: students must have a cumulative Lab/Science GPA of 3.0

General Education Requirements:

Prerequisites: Nursing Major; Minimum grade of C in BIO 100, BIO 208, BMB 207, BMB 209, BMB 240, BMB 241, CHF 201, NUR 102, NUR 103, NUR 106

Corequisites: NUR 308

Course Typically Offered: Fall & Spring

Credits: 3

NUR 301 - Care of Adults II

This course builds on the knowledge, skills and attitudes mastered in all preceding nursing courses, sciences and social sciences. Students will develop the ability to collaborate with other members of the health care team in providing comprehensive care to adults in a variety of clinical settings. Concepts of patient-centered care, quality improvement, evidence-based practice, safety, informatics, team-work and collaboration are further developed in the context of care of adults with acute and chronic health problems.

General Education Requirements:

Prerequisites: Nursing Major; NUR 200, NUR 201, NUR 202, NUR 300, NUR 303, and NUR 308

Corequisites: NUR 302, NUR 306, and NUR 316

Course Typically Offered: Fall, Spring and Summer

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 safe, high quality, evidence-based patient care. This laboratory course also provides students with the mathematics skills necessary to provide safe patient care.

Prerequisites: Nursing major, minimum of C in NUR 200, NUR 201, NUR 202, NUR 300, NUR 303

Corequisites: NUR 301, NUR 306 and NUR 316

Course Typically Offered: Fall and Spring

Credits: 1.5

NUR 303 - Pathophysiology

A study of the physiological, genetic and biochemical basis of disease.

Course Note: Students must have an overall cumulative GPA 3.0; cumulative Lab/Science GPA of 3.0

General Education Requirements:

Prerequisites: Nursing major (or by permission); minimum grade of C in BIO 208, BMB 240, BMB 241, NUR 102, NUR 103, NUR 106

Course Typically Offered: Fall & Spring

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).

General Education Requirements:

Prerequisites: NUR 200, NUR 201, NUR 202, NUR 203, NUR 300, NUR 303, and NUR 308

Course Typically Offered: Fall and Spring

Credits: 2

NUR 308 - Health Assessment through the Life Span Lab

Develops the knowledge and skills necessary to conduct an individual assessment through actual and virtual laboratory activities. Emphasis on data collection through the development of communication, interviewing, history taking and physical examination skills.

Course note: Overall cumulative GPA 3.0; cumulative Lab/Science GPA of 3.0.

General Education Requirements:

Prerequisites: Nursing Major; minimum grade of C in BIO 100, BIO 208, BMB 207, BMB 209, BMB 240, BMB 241, CHF 201, NUR 102, NUR 103, and NUR 106

Corequisites: NUR 300

Course Typically Offered: Fall

Credits: 1

NUR 310 - Evidence Based Practice in Healthcare

Methods of research and basic concepts to the research process will be introduced. Qualitative and quantitative approaches will be addressed. The student will evaluate research studies and consider the implications of research for nursing practice. Students will gain an appreciation of the role of research in the development of the discipline and profession of nursing. Emphasis will be placed on the role of evidence-based practice in the delivery of high quality, safe patient-centered care.

Course Note: Overall cumulative GPA 3.0; cumulative Lab/Science GPA of 3.0 is needed.

General Education Requirements: Writing Intensive

Prerequisites: Nursing Major with a minimum GPA of 3.0; STS 132 or equivalent, NUR 200 and NUR 300.

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.

General Education Requirements:

Prerequisites: NUR Major; NUR 200, NUR 201, NUR 202, NUR 300, NUR 303 and NUR 308

Course Typically Offered: Fall, Spring and Summer

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.

General Education Requirements:

Prerequisites: NUR 320.

Corequisites: NUR 320

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.

General Education Requirements:

Prerequisites: NUR 340, NUR 341, NUR 413, NUR 414, NUR 415

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.

General Education Requirements:

Prerequisites: NUR 340, NUR 341, NUR 413, NUR 414, NUR 415

Corequisites: NUR 334

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.

General Education Requirements:

Prerequisites: NUR 301, NUR 302, NUR 306, NUR 316

Corequisites: NUR 341 (may be taken prior to NUR 341 with department consent)

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.

General Education Requirements:

Prerequisites: NUR 301, NUR 302, NUR 306, NUR 316

Corequisites: NUR 340

Course Typically Offered: Fall & Spring

Credits: 2

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.

General Education Requirements:

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 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.

General Education Requirements:

Prerequisites: NUR 301, NUR 302, NUR 306 and NUR 316

Corequisites: NUR 414 (may be taken before NUR 414 with department consent)

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.

General Education Requirements:

Prerequisites: NUR 301, NUR 302, NUR 306, NUR 316

Corequisites: NUR 413

Course Typically Offered: Fall & Spring

Credits: 1

NUR 415 - Socio-Cultural Issues in Health and Health Care

This course explores social and cultural influences on health and illness. Cultural diversity, cultural competence, social determinants of health, health disparities, and health literacy will be topics covered.

General Education Requirements: Social Contexts and Institutions and Cultural Diversity and International Perspectives

Prerequisites: Nursing Major or Non-nursing by department consent

Course Typically Offered: Fall and 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.

General Education Requirements:

Prerequisites: NUR 340, NUR 341, NUR 413, NUR 414, NUR 415

Corequisites: NUR 417 (may be taken prior to NUR 417 with department consent)

Course Typically Offered: Fall & Spring

Credits: 3

NUR 417 - 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.

General Education Requirements:

Prerequisites: NUR 340, NUR 341, NUR 413, NUR 414, NUR 415

Corequisites: NUR 416 (may be taken prior to NUR 416 with department consent)

Course Typically Offered: Fall & Spring

Credits: 1

NUR 419 - Introduction and Service to Global Health

This course will introduce students to global health concepts and will explore global burden of diseases, social and environmental determinants of health, implications of migration, travel and displacement, and globalization of health and healthcare. The students will learn about health disparities in undeserved and underprivileged countries. The meaning of global citizenship and the role of the nurse as an advocate for human rights will be explored. Field and living conditions may be rigorous and/or primitive and include travel/overnight stay. The course will meet weekly prior to the travel component. There is a fee associated with this course for travel expenses. This course is for students that are in the Nursing Major.

General Education Requirements:

Prerequisites: Permission

Course Typically Offered: Spring

Credits: 3

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: non-Nursing majors may take course with department consent

General Education Requirements:

Prerequisites: Nursing Major and a minimum grade of C in NUR 200, NUR 201, and NUR 202 or 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.

General Education Requirements:

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 444 - Management and Leadership in Health Care System

This course focuses on leadership and management competencies needed by professional nurses to be successful in leading themselves, others and organizations as a full partner in inter-professional teams. Theoretical and evidence-based frameworks are used to analyze current best practices in leadership and management. Emphasis is placed on the student's understanding of leadership roles, systems communications, team dynamics, quality improvement, and resource management. Leadership activities and projects provide opportunities for students to expand their leadership and management skills and to assume the role of nurse as a change agent.

General Education Requirements:

Prerequisites: NUR 334, NUR 335, NUR 416, NUR 417, NUR 452, and NUR 453

Corequisites: NUR 447 and NUR 455 and NUR 456

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: Capstone Experience

Prerequisites: NUR 334, NUR 335, NUR 416, NUR 417, NUR 452, and NUR 453

Corequisites: NUR 444, NUR 455 and NUR 456

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.

General Education Requirements:

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.

General Education Requirements:

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 primary, secondary, tertiary prevention, public health frameworks, policy, health determinants, and epidemiology. Students will develop evidence-based, population-focused interventions about current public and community health issues. Students perform population and community assessments and interventions as well as engage in extensive service learning.

General Education Requirements: Population and the Environment

Prerequisites: Nursing major, minimum grade of C in NUR 334, NUR 335, NUR 340 and NUR 341

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.

General Education Requirements:

Prerequisites: NUR 340, NUR 341, NUR 413, NUR 414, NUR 415

Corequisites: NUR 452

Course Typically Offered: Fall & Spring

Credits: 1

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.

General Education Requirements: Capstone Experience and Ethics

Prerequisites: NUR 334, NUR 335, NUR 416, NUR 417, NUR 435, NUR 452, NUR 453

Corequisites: NUR 444, NUR 447 and NUR 456

Course Typically Offered: Fall & Spring

Credits: 5

NUR 456 - Professional Practice Through the Lifespan

This course synthesizes the knowledge, skills, and behaviors of professional nursing practice at the baccalaureate level. Emphasis is on the multi-faceted role of the professional nurse in the provision of care across the health-illness continuum throughout the lifespan. Content is designed to assist students to assess complex patient care needs during transitions in care settings as a vital member of the inter-professional team. Standardized testing, practice questions, and a review session will be incorporated to help prepare students for licensure exam.

General Education Requirements:

Prerequisites: NUR 334, NUR 335, NUR 416, NUR 417, NUR 452 and NUR 453

Corequisites: NUR 444, NUR 447, and NUR 455

Course Typically Offered: Fall & Spring

Credits: 3

NUR 495 - Independent Study in Nursing

Individualized study with permission of the instructor. May or may not have an experiential component.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: Permission.

Course Typically Offered: Fall & Spring

Credits: 1-3

Peace Studies

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: Social Contexts and Institutions and Cultural Diversity and International Perspectives

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: Social Contexts and Institutions', 'Artistic and Creative Expression', 'and Writing Intensive

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: Social Contexts and Institutions and Writing Intensive

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: Cultural Diversity or International Perspectives and 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: Cultural Diversity and International Perspectives

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: Ethics

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: Cultural Diversity and International Perspectives

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: Cultural Diversity and International Perspectives and Population and the Environment

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.

General Education Requirements:

Course Typically Offered: Fall & Spring

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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

Course Typically Offered: Summer

Credits: 3

PAX 490 - Special Topics in Peace and Reconciliation Studies

Review of specific subject areas in the field. Subject areas vary by semester. May be repeated for credit.

Course Typically Offered: Fall, Spring, 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: Ethics and Cultural Diversity and International Perspectives

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.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: PAX 201 or permission.

Course Typically Offered: Variable

Credits: 1-6

Philosophy

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: Ethics', 'Western Cultural Tradition and Social Contexts and Institutions

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: Ethics and Western Cultural Tradition

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: Western Cultural Tradition

Course Typically Offered: Every Year

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: Ethics', 'Western Cultural Tradition and Artistic and Creative Expression

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: Western Cultural Tradition and Social Contexts and Institutions

Course Typically Offered: Fall

Credits: 3

PHI 132 - Life, Technology and Evolution

A philosophical study of the relationship between our evolutionary past, the emergence of cultures and technologies that define our human present, and the sustainability of life given the environmental challenges of the future. Focus will be given to recent ethical and ecological issues in biotechnology, local climate change issues and inter-disciplinary thinking.

General Education Requirements: Population and Environment

Course Typically Offered: Every Year

Credits: 3

PHI 201 - Becoming a Philosopher

An introduction to the methods and conventions of contemporary philosophy, with a focus on providing students with the skills needed to read, understand, discuss, analyze, and write philosophy. Through this writing intensive course, students will learn techniques, terminology, and diverse styles of doing philosophy. It has no prerequisites and is open to all students interested in developing philosophical and writing skills. Typically offered once a year with varying topics.

General Education Requirements: Western Cultural Tradition, Writing Intensive

Prerequisites: N/A

Corequisites: N/A

Course Typically Offered: Fall

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: Ethics', 'Western Cultural Tradition

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: Western Cultural Tradition and Social Contexts and Institutions

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: Western Cultural Tradition and Social Contexts and Institutions

Prerequisites: Sophomore standing or permission.

Course Typically Offered: Variable

Credits: 3

PHI 221 - Classical Chinese Philosophy

This course provides an introduction to major philosophical schools in the "classical" period of (pre-Qin) China, including Confucianism, Mohism, Daoism, and Legalism. We will concentrate on early debates over human nature and the best practices of self-cultivation, the general nature of the cosmos and the human role in it, and the proper ordering of society. We will read not only the original texts by early Chinese philosophers, but also contemporary discussions and developments of their views. These different philosophical positions greatly influenced later Chinese intellectual and social history, including the development of Buddhism, and shaped cultures and religions in Japan, Korea, and Southeast Asia as well. Thus, understanding these early debates is an important stepping-stone for understanding East Asian thought and culture generally.

General Education Requirements: Cultural Diversity and International Perspectives and Ethics

Prerequisites: Sophomore Standing or Permission

Course Typically Offered: Alternating years

Credits: 3

PHI 222 - Philosophy of Games

An introduction to the ways that philosophy can inform our understanding of games and the way games can provide new means for approaching philosophical problems. Topics include philosophical accounts of games, the aesthetic value and ethics of games, how formal theories of decision and games can be applied to philosophical problems, and how games can serve as a medium for addressing philosophical questions, with a focus on agency, personal identity, and meaning. Class preparation will require both reading philosophical texts and playing or watching play of assigned games.

General Education Requirements: Artistic and Creative Expression and Western Cultural Tradition

Prerequisites: None

Course Typically Offered: Variable

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: Ethics and Western Cultural Tradition

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: Ethics', 'Western Cultural Tradition and Social Contexts and Institutions

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: Ethics', 'Social Contexts and Institutions and Population and the Environment

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: Social Contexts and Institutions and Ethics

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, medical humanities, ethics in a pandemic, and other ethical dimensions of medical practice.

General Education Requirements: Ethics', 'Western Cultural Tradition and Social Contexts and Institutions

Prerequisites: Sophomore standing, or Nursing major, or permission

Course Typically Offered: Fall and Spring

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: Ethics', 'Western Cultural Tradition', 'Social Contexts and Institutions and Cultural Diversity and International Perspectives

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: Ethics', 'Western Cultural Tradition

Prerequisites: No first-year students or permission.

Course Typically Offered: Variable

Credits: 3

PHI 242 - Ethics in Professional Life

Examines what it means to be a good professional, with a focus on nursing, social work, and counseling. Explores roles and responsibilities of professionals as viewed through different ethical frameworks. Emphasizes interprofessional relationships and effective teamwork in settings of interagency/interorganization collaboration. Encourages reflection and articulation of personal values and goals, and includes strategies for cultivating key professional virtues while integrating professional ethics with personal moral convictions.

General Education Requirements: Ethics

Prerequisites: Sophomore standing or higher.

Course Typically Offered: Variable

Credits: 3

PHI 244 - Philosophy of Law

Topics include the nature and limits of law, sovereignty and legal duty. Special emphasis on theories of jurisprudence, the relationship between morality and law, the constitutional role of courts, and critical legal studies, including feminism, critical race theory, environmental law and deconstruction.

General Education Requirements: Ethics', 'Western Cultural Tradition and Social Contexts and Institutions

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: Quantitative Literacy and Western Cultural Tradition

Prerequisites: No first-year students.

Course Typically Offered: Fall

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: Western Cultural Tradition and Artistic and Creative Expression

Prerequisites: No first-year students or permission.

Course Typically Offered: Variable

Credits: 3

PHI 287 - Buddhist Philosophy

Exploration and philosophical evaluation of the foundations of Buddhism, including the basic teachings of the Gautama Buddha (Four Noble Truths, Noble Eightfold Path, Dependent Origination, etc.), and later metaphysical, epistemic, and ethical developments from the Madhyamaka, Yogācāra, Chan/Zen, and other schools of Buddhist thought and practice.

General Education Requirements: Ethics', 'Cultural Diversity and International Perspectives

Prerequisites: No first-year students.

Course Typically Offered: Variable

Credits: 3

PHI 310 - History of Medieval and Renaissance Philosophy

An analysis of Arabic and Latin philosophy from late antiquity to the 16th century with emphasis on the developments in logic, epistemology, physics, and metaphysics that led to the birth of early modern philosophy in Europe.

Prerequisites: One Philosophy course or Permission

Course Typically Offered: Spring, Alternating years

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: Ethics and Western Cultural Tradition

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: Ethics', 'Western Cultural Tradition and Cultural Diversity and International Perspectives

Prerequisites: At least one course in philosophy, excluding PHI 103.

Course Typically Offered: Variable

Credits: 3

PHI 332 - Environmental Philosophy

A focused study of texts, perspectives and issues concerning the philosophy of nature, environmentalism and climate change from historical, cross-cultural and humanities perspectives.

General Education Requirements: Population and Environment

Prerequisites: One Philosophy course or Permission

Course Typically Offered: Spring, Alternating years

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: Ethics and Western Cultural Tradition

Prerequisites: One course in philosophy or permission.

Course Typically Offered: Variable

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: Ethics', 'Western Cultural Tradition and Writing Intensive

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: Ethics and Social Contexts and Institutions

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: Ethics , Cultural Diversity and International Perspectives , and Writing Intensive

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: Artistic and Creative Expression

Prerequisites: No first-year students and one course in philosophy.

Course Typically Offered: Variable

Credits: 3

PHI 353 - Minds and Machines

A study of classic and recent work in the philosophy of mind and artificial intelligence. Topics include the relation between mind and body, the nature of consciousness, knowledge of other minds, neuroscience of free will, computational models of the mind, whether machines can have minds, and the limits of artificial intelligence.

General Education Requirements: Western Cultural Tradition and Social Contexts and Institutions

Prerequisites: One course in philosophy or permission.

Course Typically Offered: Not Regularly Offered

Credits: 3

PHI 360 - Metaphysics

Metaphysics is the branch of philosophy that concerns itself with the fundamental nature of the world. Questions that metaphysics attempts to answer include: What do we mean when we say something exists? Do any things other than physical objects (numbers, qualities, God, etc.) exist? Why is there anything rather than nothing? What are human beings: material organisms, immaterial souls, or something else? What makes you the same person as you were ten years ago? Are we really free to choose our actions, or are our actions (even thoughts) predetermined by something else in the world? What is the nature of time and space? Is time travel possible?

In this course, we will focus on some of those questions and evaluate arguments for different answers that are proposed by philosophers from different philosophical traditions. This will not only give us a deep understanding of those metaphysical disputes but also help us approach other branches of philosophy.

General Education Requirements: Western Cultural Tradition

Prerequisites: One Philosophy course or Permission

Course Typically Offered: Alternating years

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: Western Cultural Tradition

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: Artistic and Creative Expression

Prerequisites: Junior standing or permission.

Course Typically Offered: Variable

Credits: 3

PHI 432 - Environmental Justice

A critical study of historical and multicultural perspectives on environmental justice. This course will focus on environmental intersectionality, the theory that environmental burdens disproportionately affect oppressed social groups. Attention will be given to environmental philosophy, ethics and policy, ranging from local indigenous struggles, to national and global issues.

General Education Requirements: Ethics , Social Contexts and Institutions , Population and the Environment and Writing Intensive

Prerequisites: Junior, senior or graduate standing or PHI 232.

Course Typically Offered: Variable

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.

General Education Requirements:

Prerequisites: 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.

General Education Requirements:

Prerequisites: 9 hours in philosophy and permission of department and instructor.

Course Typically Offered: Variable

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: Writing Intensive and Capstone

Prerequisites: 3 courses in philosophy; junior or senior standing.

Course Typically Offered: Spring

Credits: 3

Physics

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.)

General Education Requirements:

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 105 - Descriptive Physics

An introduction to basic concepts of physics intended for the non-science major. Lec w/dem 3, Lab 3.

General Education Requirements: Lab in Basic or Applied Sciences

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.

General Education Requirements: Lab in Basic or Applied Sciences

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.

General Education Requirements: Lab in Basic or Applied Sciences

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.

General Education Requirements: Lab in Basic or Applied Sciences

Course Typically Offered: Fall, Spring and 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.

General Education Requirements: Lab in Basic or Applied Sciences

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.

General Education Requirements: Lab in the Basic or Applied Sciences

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. While not required, it is recommended that MAT 127 be taken concurrently with, or prior to PHY 122. 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.

General Education Requirements: Lab in the Basic or Applied Sciences

Prerequisites: A grade of C- or better in PHY 121 and a grade of C or better in MAT 126

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.

General Education Requirements:

Prerequisites: Sophomore standing.

Course Typically Offered: Fall

Credits: 1

PHY 223 - Special Relativity

The basic principles of special relativity with a primary emphasis on mechanics.

General Education Requirements:

Prerequisites: MAT 126, and a grade of C- or better in either 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.

General Education Requirements:

Prerequisites: A grade of C- or better in both PHY 261 and PHY 236 or permission of instructor.

Corequisites: PHY 223

Course Typically Offered: Spring

Credits: 1 - 3

PHY 231 - Mathematical Methods in Physics

Mathematical methods with applications to physics. Topics include: infinite series, power series, complex numbers, linear algebra, partial differentiation, multiple integrals, vector analysis, Fourier series and Fourier transforms, ordinary and partial differential equations. If this course was taken as a topics course in PHY 497, it cannot be repeated for credit.

General Education Requirements:

Prerequisites: Grade of C or better in MAT 228

Corequisites: MAT 259 or permission of instructor

Course Typically Offered: Spring

Credits: 3

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.

General Education Requirements:

Prerequisites: MAT 127, a grade of C- or better in either PHY 112 or PHY 122

Course Typically Offered: Fall

Credits: 3

PHY 241 - Computational Physics

This course is a problem-solving course, developing the ability to solve numerical problems in physics and astronomy using computer programming methods with the Python language. Upon completion of this course, the student will possess the basic knowledge of numerical modeling that may be required for graduate school or in a position at a technical corporation.

If this course was taken as a topics course in PHY 497, it cannot be repeated for credit.

General Education Requirements:

Prerequisites: A grade of C- or better in PHY 236

Course Typically Offered: Spring

Credits: 3

PHY 261 - Physical Measurements Laboratory

Experiments primarily in modern physics. Lab 2.

General Education Requirements:

Prerequisites: MAT 127, a grade of C- or better in either PHY 112 or PHY 122

Corequisites: PHY 236

Course Typically Offered: Fall

Credits: 2

PHY 262 - Electronics

A laboratory-based introduction to analog and digital electronics and to the collaborative design and testing of circuits for a variety of practical applications. Primarily for physics and engineering physics majors; others admitted by permission. If this course was taken as a topics course in PHY 497, it cannot be repeated for credit.

General Education Requirements:

Prerequisites: MAT 127, A grade of C- or better in either PHY 112 or PHY 122

Course Typically Offered: Spring

Credits: 2

PHY 364 - 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 experimental methods. Normally taken by junior physics and engineering physics majors.

General Education Requirements: Writing Intensive

Prerequisites: MAT 228 and a grade of C- or better in PHY 236

Course Typically Offered: Fall

Credits: 2

PHY 365 - Mechanics Laboratory

Theories and practices in the measurement of physical quantities in mechanics. Primarily for physics and engineering physics majors; others admitted by permission.

General Education Requirements: Writing Intensive

Prerequisites: MAT 259 and a grade of C- or better in PHY 451

Course Typically Offered: Spring

Credits: 2

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: Grade of C- or better in PHY 200; senior standing.

Course Typically Offered: Fall

Credits: 1

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.

General Education Requirements:

Prerequisites: MAT 126, CHY 121, and a grade of C- or better in either PHY 112 or PHY 122 or permission

Course Typically Offered: Spring

Credits: 3 - 4

PHY 451 - Mechanics

A detailed treatment of mechanics using Newtonian and Lagrangian methods. Newton's laws, particle motion in a plane, linear oscillations, damped oscillations, coupled oscillators, rigid body rotation, and potential methods.

General Education Requirements:

Prerequisites: A Grade of C- or better in PHY 231

Course Typically Offered: Fall

Credits: 3

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.

General Education Requirements:

Prerequisites: A grade of C- or better in either PHY 112 or PHY 122 and in PHY 231

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.

General Education Requirements:

Prerequisites: A grade of C- or better in PHY 454.

Course Typically Offered: Spring

Credits: 3

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.

General Education Requirements:

Prerequisites: MAT 258 or MAT 259 and a grade of C- or better in PHY 236.

Course Typically Offered: Spring

Credits: 3

PHY 469 - Quantum and Atomic Physics

Basic principles of quantum mechanics. Exploration of canonical systems and the postulates of quantum mechanics using Dirac, vector-matrix, and wavefunction notations. Analysis of spin, energy, position, and momentum eigenstates, both time independent and time dependent, for several bound and scattering state systems.

General Education Requirements:

Prerequisites: A grade of C- or better in both PHY 231 and PHY 236

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.

General Education Requirements:

Prerequisites: MAT 259 and a grade of C- or better in PHY 236

Course Typically Offered: Spring

Credits: 2

PHY 471 - Nuclear Physics Laboratory

Laboratory exercises to accompany PHY 470. Lab 2.

General Education Requirements:

Corequisites: PHY 470

Course Typically Offered: Spring

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.

General Education Requirements:

Prerequisites: A grade of C- or better in either PHY 112 or PHY 122.

Corequisites: MAT 228

Course Typically Offered: Fall

Credits: 3

PHY 480 - Physics of Materials

An Introductory courses 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.

General Education Requirements:

Prerequisites: A grade of C- or better in both PHY 231 and PHY 236

Course Typically Offered: Fall

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.

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.

General Education Requirements: Together with PHY 400', 'this course satisfies the General Education Capstone Experience Requirement.

Prerequisites: A grade of C- or better in PHY 481

Course Typically Offered: Fall, Spring, and 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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

Course Typically Offered: Fall, Spring, Summer

Credits: 1-3

Plant, Soil and Environmental Sciences

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 may include field trips during class hours.

General Education Requirements: Lab in the Basic or Applied Sciences

Course Typically Offered: Fall

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: Application of Scientific Knowledge and Population and the Environment

Course Typically Offered: Fall

Credits: 3

PSE 110 - Introduction to Horticulture

Students will understand the science of growing plants. They will apply botany and soil science to produce horticulture crops. Students will work independently on hands-on projects to apply basic science principles in order to understand horticultural concepts including fruit and leaf morphology, seed germination, and plant growth.

General Education Requirements: Applications of Scientific Knowledge

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: Ethics and Population and the Environment

Course Typically Offered: Spring, Odd Years

Credits: 3

PSE 203 - Weed Biology and Identification

This course is focused on the study of weed communities in turf and urban landscapes, roadsides and waste areas, wetlands, forest edges and agricultural fields. Students will learn to identify approximately sixty weedy plant species and will know the principle habitat, life cycle, plant family and binomial for each species. Course may include field trips during class hours.

General Education Requirements:

Course Typically Offered: Fall, Even Years

Credits: 1

PSE 210 - Digital Landscape Graphics

An introduction to 2D/3D computer-aided design (CAD) with a focus on landscape design using Vectorworks Landmark. Exercises relevant to landscape design and horticulture fields include topography manipulation, plan graphics, construction documentation, site modeling, and use of the software's construction schedules and plant libraries.

General Education Requirements:

Prerequisites: ENH majors or permission

Course Typically Offered: Spring, Odd Years

Credits: 2

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.

General Education Requirements:

Prerequisites: BIO 200 or PSE 100 or SFR 100.

Course Typically Offered: Fall, Odd Years

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 may include field trips during class hours.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: Grade of C- or better in PSE 100 or BIO 200 or SFR 100.

Course Typically Offered: Fall

Credits: 4

PSE 224 - Site Analysis, Grading and Drainage

An introduction to the landscape design site planning process, this course introduces students to reading the landscape in topographic map form and the principles of site manipulation to control hydrological function. Topics and exercises include recognizing existing site hydrology, directing surface water flow around structures and through subsurface systems, layout and grading for circulation, calculating cut and fill, retaining wall design and slope design. Course may include field trips outside of class on weekdays.

General Education Requirements:

Prerequisites: A grade of C- or better in PSE 100 or permission

Course Typically Offered: Fall

Credits: 3

PSE 227 - Landscape Design I

The first Landscape Design course in a series of two. An introduction to fundamental principles and practices of landscape design including hand graphics techniques, design process, design composition, development of space, hardscape construction materials and basic planting design.

General Education Requirements:

Prerequisites: Environmental Horticulture Major or Permission

Course Typically Offered: Spring

Credits: 4

PSE 260 - Pesticide Applicator Certification

Prepares students for careers in horticulture, agriculture, forestry, and biological sciences in which pesticides are applied. Students must pass two written exams and are expected to obtain a private applicator license for the state of Maine. Students who enroll for a second semester must pass two commodity exams to earn another credit for the course.

General Education Requirements:

Prerequisites: BTY-BS Major or EES-BS Major or ENV-BS Major or FTY-BS Major or SAG-BS Major or permission

Course Typically Offered: Fall

Credits: 1

PSE 261 - Nutrient Management

This 5-week course provides students with tools to understand fertilizer recommendations, calculate fertilizer additions from organic and inorganic sources for different soils, and develop nutrient management plans. The importance and goals of nutrient management and nutrient management in different scales and types of systems are emphasized.

General Education Requirements:

Prerequisites: BMB 207 or CHY 121 and EES 140

Course Typically Offered: Spring

Credits: 1

PSE 262 - Introduction to Cannabis Cultivation and Science

The purpose of this course is to teach students about cannabis cultivation and prepare students for possible work in the cannabis field. The course will cover the history of cannabis, botany, production requirements, pest management, fertility, legal aspects, production of cannabis products, and uses of both high and low THC cannabis.

General Education Requirements:

Prerequisites: PSE 100 and EES140; Major in Sustainable Agriculture, Environmental Horticulture, Biology or Ecology and Environmental Sciences; or minor in Sustainable Agriculture, Sustainable Food Systems or Environmental Horticulture; or instructor permission

Course Typically Offered: Spring

Credits: 1

PSE 263 - Plant Health Diagnostics

The goal of plant health diagnosis is to identify the causal agent threatening plant health and to prescribe management to reduce plant damage from insects, pathogens and abiotic stresses. This course summarizes the methods and strategies used to diagnose stresses affecting plant health.

General Education Requirements:

Prerequisites: BIO 100 or PSE 100 or SFR 100

Course Typically Offered: Fall

Credits: 1

PSE 264 - Introduction to Composting

This course provides students with tools to understand the composting process including biology, feedstocks, recipe development and types of composting systems. Other topics include managing and troubleshooting compost piles, analyzing compost, and appropriate use are considered.

General Education Requirements:

Prerequisites: BIO 100 or PSE 100 or SFR 100

Course Typically Offered: Fall

Credits: 1

PSE 265 - Soil Health for Farm Resilience and Climate Mitigation

This course provides students with tools to understand the concepts and practices of soil health in different scales and types of systems. The importance, goals, and challenges of managing for soil health are emphasized. Both agronomic and environmental outcomes for soil health practices are considered. Students will build their understanding of, and ability to use, course information through weekly discussions and will critically evaluate the use of soil health practices for climate mitigation.

General Education Requirements:

Prerequisites: BIO 100 or PSE 100 or SFR 100, and EES 140 or permission

Course Typically Offered: Fall

Credits: 1

PSE 266 - Small Fruit and Berry Production

This course is an introduction to growing berries and small fruit, including strawberries, raspberries, highbush blueberries, and grapes. The course covers economics, site selection, soil preparation, varieties, planting and establishment, fertility requirements, pruning, harvest and pest problems through lectures, hands-on demonstrations, and one field trip to observe established planting.

General Education Requirements:

Prerequisites: BIO 200 or PSE 100 or Permission

Course Typically Offered: Fall

Credits: 1

PSE 269 - So You Want to Farm in Maine

Students will learn about various aspects of farm business planning and management. This will include how to evaluate farm enterprises, enterprise budgets and other financial tools, business plan frameworks, how to assess farm characteristics (e.g. soil quality, buildings and infrastructure, labor needs), climate change risk management planning, and marketing strategies. Successful completion of this course qualifies students for USDA Farm Service Agency Borrower Training Credit.

General Education Requirements:

Prerequisites: AVS 145 or PSE 100 or PSE 105 or permission

Course Typically Offered: Spring

Credits: 1

PSE 270 - Wild Blueberry Production

This course is an introduction to the basics of growing wild blueberries in Maine. The course covers site selection, economics, integrated pest management, pollinators, disease identification and treatment, nutrient and fertilization management, climate change challenges, pruning, harvest, connecting to markets, and product sales opportunities. The course includes one field trip during class time to observe an established blueberry farm.

Prerequisites: BIO 100 or PSE 100 or permission

Course Typically Offered: Fall

Credits: 1

PSE 305 - Problems in Plant, Soil and Environmental Sciences

Opportunity is provided for specialization in specific areas of plant, soil and environmental sciences.

General Education Requirements:

Prerequisites: Permission.

Course Typically Offered: Fall, Spring, Summer

Credits: 0-16

PSE 312 - Sustainable Food Systems: Challenges and Opportunities

This course is an examination of food systems through a sustainability lens, including the evolution of food systems over time, supply and value chains, food justice, food sovereignty, hunger, food and agriculture policy at the federal and state level.

General Education Requirements:

Prerequisites: PSE 105 or permission

Course Typically Offered: Fall, Even Years

Credits: 3

PSE 325 - Turf and Grounds Management

Investigation of the science and practice of turf and grounds management in residential, commercial, and public landscapes. Topics include grass biology and identification, lawn establishment, turfgrass maintenance, site analysis and improvement, designing for effective maintenance, mulching and weed control, plant responses to pruning, and the ecological tension between native and managed landscapes. Lab activities will be conducted within the campus landscape.

General Education Requirements:

Prerequisites: A grade of C- or better is required in PSE 100 or BIO 200 or SFR 100.

Course Typically Offered: Fall, Odd Years

Credits: 3

PSE 328 - Landscape Design II

The second Landscape Design course in a series of two, this is a project-intensive course focusing on the culmination of previous course instruction where students produce multiple residential landscape plans with all supporting documentation. Students will have hands-on opportunity to produce plans for real residential sites. Layout plans and advanced planting design will be introduced. Students are expected to integrate course knowledge in soils, site analysis, grading, drainage, hand drawn and CAD landscape graphics, landscape construction materials and details, woody and herbaceous plant material, and cost estimating schedules to supplement construction documentation. Course may include field trips outside of class on weekdays.

General Education Requirements:

Prerequisites: A grade of C- or better in PSE 210 and PSE 219 and PSE 221 and PSE 227

Course Typically Offered: Fall

Credits: 4

PSE 360 - Agroecology and Sustainable Cropping Systems

Students will learn about and discuss various aspects of transdisciplinary agroecology and sustainable cropping systems. This will include a synthesis of fundamental topics (e.g. tillage, irrigation, crop genetic resources, diversity) in the context of social and economic realities of contemporary U.S. agriculture. We will explore agronomic and horticultural cropping systems using local, regional, national, and global examples. Students will work collaboratively in on-farm context to assess an agroecology system, understand its complexities, practice research and practical farm management skills (e.g. biodiversity assessment, soil sampling) and make recommendations for improving sustainability.

General Education Requirements: Writing Intensive

Prerequisites: PSE 105 or permission

Course Typically Offered: Fall, Odd Years

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)

General Education Requirements:

Prerequisites: Sophomore standing and permission.

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. Course may include field trips during class hours. Lec 2, Lab 2. PSE 403 and PSE 513 cannot both be taken for credit.

General Education Requirements:

Prerequisites: BIO 200 or PSE 100 or SFR 100

Course Typically Offered: Fall, Odd Years

Credits: 3

PSE 410 - Plant Propagation

Students will explore the principles and practices of plant propagation, including sexual propagation from seeds and asexual propagation from cuttings, tissue culture, grafting, budding, division, and layering. This course includes a lab focused on practical experiences in propagation and the basics of experimental design and data interpretation.

Prerequisites: A grade of C- or better in PSE 100 or BIO 100 or SFR100, and Junior standing. EES 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 may include field trips during class hours. EES 140 is recommended.

General Education Requirements:

Prerequisites: A grade of C- or better in PSE 100 or BIO 200 or SFR 100, and Junior standing.

Course Typically Offered: Spring

Credits: 4

PSE 424 - Nursery Management

Covers the basic systems and methods for production of nursery crops, including container and field production, quality control, substrate management, irrigation, pest and diseases, financial considerations, retail and wholesale operations, selling and shipping nursery stock, overwintering, and the relationship between nursery and landscape industries. Extensive outdoor labs include work on campus. Course may include field trips on weekends.

General Education Requirements: Writing Intensive

Prerequisites: Junior standing and a grade of C- or better in PSE 100, BIO 100 or SFR 100.

Course Typically Offered: Fall, Even Years

Credits: 3

PSE 425 - Landscape Management

Designed to provide students with the opportunity to bring together all aspects of theoretical and applied training. Students develop an understanding of professional practice in landscape management, business management, project management and group collaboration. Accomplished through interacting with a variety of professionals, field trips and real life hands-on projects. Lec 2, Lab 2. Course may include field trips outside of class time on weekdays.

General Education Requirements: Writing Intensive

Prerequisites: Grade of C- or better in PSE 203 or PSE 221 or PSE 325 or PSE 403

Course Typically Offered: Spring, Even Years

Credits: 3

PSE 430 - SL: Sustainable Horticulture and Agriculture Capstone

This course will allow students in Environmental Horticulture and Sustainable Agriculture majors the opportunity to apply information learned in their respective programs. Students will collaborate on service learning projects. Students will gain professional skills and knowledge through guest lectures by professionals in a variety of horticulture- and agriculture-related occupations. By engaging in service and community learning through this capstone course, students will partner with research groups, outreach and education organizations, or independent businesses to apply their knowledge and skills to real-world problems that address community needs. This course has been designated as a UMaine service-learning course.

General Education Requirements: Capstone

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.

General Education Requirements:

Prerequisites: BMB 208 or CHY 122 and EES 140.

Course Typically Offered: Spring, Even Years

Credits: 3

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 may include field trips during class hours.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: BIO 100 and BMB 207/209 or CHY 121/123 or permission.

Course Typically Offered: Spring, Odd Years

Credits: 3

Political Science

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: Social Contexts and Institutions

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: Western Cultural Tradition and Cultural Diversity and International Perspectives

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: Western Cultural Tradition and Ethics

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: Social Contexts and Institutions

Course Typically Offered: Summer

Credits: 3

POS 220 - Leadership and Social Movements

Examines the role of social movements in processes of political and social change. Pays special attention to movement strategies and tactics, member recruitment, the dynamic interaction between activists and elites, and the mobilization of resources for movement sustainability.

General Education Requirements:

Prerequisites: LDR 100 or permission; LDR 220 cannot be taken for credit if taken previously as a topic in POS 359

Course Typically Offered: Fall, Alternating years

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: Social Contexts and Institutions and Cultural Diversity and International Perspectives

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: Social Contexts and Institutions and Cultural Diversity and International Perspectives

Course Typically Offered: Fall

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.

General Education Requirements: Ethics

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: Ethics', 'Western Cultural Tradition and Writing Intensive

Prerequisites: POS 201 or permission or junior or senior standing.

Course Typically Offered: Variable

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: Ethics', 'Western Cultural Tradition and Writing Intensive

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: Western Cultural Tradition and Writing Intensive

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: Ethics', 'Western Cultural Tradition and Writing Intensive

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.

General Education Requirements: Social Contexts and Institutions

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: Western Cultural Tradition and Ethics

Prerequisites: POS 201

Course Typically Offered: Spring

Credits: 3

POS 308 - Liberalism and its Critics

In this course, we carefully examine some of the landmark texts out of which modern liberalism and conservatism emerged. We study the fascinating shape that these ideas initially took during the Enlightenment, and we ask whether the changes that they have since undergone represent improvements or deteriorations. Our goal, then, is not only to understand the true potentials of liberalism and conservatism. It is also to gain a broader view of the political identities available to us in modern times.

General Education Requirements: Ethics and Writing Intensive

Prerequisites: POS 201 or permission

Course Typically Offered: Spring and Summer

Credits: 3

POS 309 - Topics in Political Theory

Offers a detailed examination of a selected topic in political theory. May be repeated for credit.

General Education Requirements:

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: Social Contexts and Institutions

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: Social Contexts and Institutions and Cultural Diversity and International Perspectives

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: Social Contexts and Institutions and Cultural Diversity and International Perspectives

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: Social Contexts and Institutions and Cultural Diversity and International Perspectives

Prerequisites: Six hours of political science.

Course Typically Offered: Variable

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: Social Contexts and Institutions

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.

General Education Requirements:

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: Social Contexts and Institutions

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: Ethics and Social Contexts and Institutions

Prerequisites: POS 100 or 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: Social Contexts and Institutions

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: Artistic and Creative Expression

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: Artistic and Creative Expression

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.

General Education Requirements:

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.

General Education Requirements:

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: Social Contexts and Institutions

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: Social Contexts and Institutions and Cultural Diversity and International Perspectives

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.

General Education Requirements:

Prerequisites: POS 120

Course Typically Offered: Variable

Credits: 3

POS 370 - Terrorism

Analyzes the impact of terrorism on international affairs and security. Topics include the origins of terrorism, the evolution of terrorism, the proliferation of weapons of mass destruction, the formulation of security strategies, and the ethical dilemmas arising from counter-terrorism.

General Education Requirements: Ethics and Cultural Diversity and International Perspectives

Prerequisites: POS 100 or POS 120 or permission.

Course Typically Offered: Variable

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: Social Contexts and Institutions and Cultural Diversity and International Perspectives

Prerequisites: POS 100 or POS 120 or permission of instructor.

Course Typically Offered: Variable

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: Social Contexts and Institutions and Cultural Diversity and International Perspectives

Prerequisites: POS 100 or POS 120.

Course Typically Offered: Variable

Credits: 3

POS 376 - Politics of the Global Economy

The world is deeply integrated through cross-border financial flows and international economic institutions. This course introduces the field of international political economy, the study of the interplay between domestic and international politics and economic policies and developments and examines the politics of trade, sovereign debt, finance, multinational corporations, global economic inequality and more. This course can be counted either in the International Relations or Comparative Politics subfield within Political Science.

General Education Requirements: Cultural Diversity/International Perspectives and Social Context and Institutions

Prerequisites: POS 120

Course Typically Offered: Variable

Credits: 3

POS 378 - Theories of War and Peace

This course is the study of the causes and effects of the major events of conflict and cooperation which occur among and across countries. The major theme is understanding patterns of war and peace through an examination of foreign policy decision-making, international trade and investment, economic development, human rights, global environmental concerns, terrorism, weapons of mass destruction, globalization, and international organizations and institutions.

General Education Requirements:

Prerequisites: POS 120 or INA 101 or Permission

Course Typically Offered: Spring

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: Social Contexts and Institutions

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: Social Contexts and Institutions

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: Social Contexts and Institutions

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: Ethics and Social Contexts and Institutions

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: Social Contexts and Institutions and Writing Intensive

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: Social Contexts and Institutions

Prerequisites: POS 100 or permission of instructor.

Course Typically Offered: Spring, Even Years

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.

General Education Requirements: Writing Intensive

Prerequisites: Junior or Senior standing.

Course Typically Offered: Variable

Credits: 3

POS 460 - Seminar in American Politics

Seminar in American Politics. Detailed examination of a topic or set of topics in American politics. Can be repeated for credit so long as it is a different seminar.

General Education Requirements:

Prerequisites: POS 100 or permission of the instructor.

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: Social Contexts and Institutions', 'Cultural Diversity and International Perspectives and Writing Intensive

Prerequisites: 6 hours of Political Science.

Course Typically Offered: Variable

Credits: 3

POS 470 - International Law

Examines international legal principles relating to state territory and jurisdiction, the oceans, human rights and war.

General Education Requirements:

Prerequisites: Junior Standing, POS 120 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: Social Contexts and Institutions

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: Social Contexts and Institutions and Cultural Diversity and International Perspectives

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.

General Education Requirements:

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: Ethics and Social Contexts and Institutions

Prerequisites: POS 100 or junior 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: 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 - SL: 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: Writing Intensive. 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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

Course Typically Offered: Fall, Spring, and Summer

Credits: 3, 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.

General Education Requirements:

Prerequisites: Permission.

Course Typically Offered: Fall, Spring, Summer

Credits: 1-3

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. This course may be repeated for credit as long as the topic for the section being taken is different from previously taken topics

General Education Requirements: Writing Intensive and Capstone Experience

Prerequisites: Senior standing and Political Science major or International Affairs major with a concentration in Political Science.

Course Typically Offered: Fall & Spring

Credits: 3

Psychology

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: Social Context and Institutions

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.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: PSY 100.

Course Typically Offered: Fall, Spring, Summer

Credits: 3

PSY 222 - Forensic Psychology

This course explores the interface of psychology and the legal system, with an emphasis on the role psychologists play in helping courts make informed decisions. The course covers landmark legal cases involving psychological science. Topics include criminal profiling, competence, the insanity defense, policy psychology, eyewitness testimony, expert testimony, jury selection, sentencing, and juvenile offending and rehabilitation.

General Education Requirements: Social Contexts and Institutions

Prerequisites: PSY 100

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.

General Education Requirements:

Prerequisites: PSY 100 or EHD 203

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.

General Education Requirements:

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: Social Contexts and Institutions

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.

General Education Requirements:

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.

General Education Requirements: Quantitative Literacy

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.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: PSY 100.

Course Typically Offered: Fall & Spring

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.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: PSY 245 or BIO 200 and Neuroscience Minor or Permission of Instructor

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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: PSY 212, PSY 241, PSY 245; junior or senior standing.

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.

General Education Requirements:

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.

General Education Requirements:

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.)

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: PSY 350 or BIO 200.

Course Typically Offered: Variable

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: Writing Intensive and Capstone

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.

General Education Requirements:

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.

General Education Requirements:

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: Writing Intensive and Capstone

Prerequisites: PSY 241, PSY 245 and permission.

Course Typically Offered: Fall, Spring, Summer

Credits: 1-3

Pulp and Paper

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.)

General Education Requirements:

Prerequisites: Sophomore standing or greater.

Course Typically Offered: Spring

Credits: 3

PPA 466 - Paper Technology

This course will focus on the application of engineering tools to processes that are found in the paper industry. Examples include the flow of suspensions in equipment, filtration during washing and papermaking, and the drying of a porous web. While the processes are related to the paper industry, the method to apply various aspects of engineering to actual processes should be of interest in a wide range of industries.

General Education Requirements:

Prerequisites: BEN 202, CHE 360 or MEE 360 or permission

Course Typically Offered: Not Regularly Offered

Credits: 3

School of Forest Resources

SFR 100 - Introduction to Forest Biology

Introductory concepts related to forest plants, animals, environment and ecology. Lec 3.

General Education Requirements: 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: Lab in the Basic or Applied Sciences 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.

General Education Requirements:

Course Typically Offered: Fall

Credits: 1

SFR 106 - Introduction to Forest Land Navigation and Technology

A hands on, in the field introduction to the basics of working with forest land navigation and technology. This course stresses the use of topographic maps and imagery commonly used by natural resource professionals, and how to use them in conjunction with compasses, recreational-grade GPS receivers, and smartphone/tablet applications. Use of computers and software to manage, analyze, and use data are covered, such as basic skills in Excel and ArcGIS.

General Education Requirements:

Prerequisites: SFR 101 or Permission

Course Typically Offered: Fall

Credits: 2

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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

Course Typically Offered: Spring, even years

Credits: 3

SFR 201 - Wildland Firefighter Preliminary Training

Prepares students for wildland firefighter basic training needed for the Firefighter Red Card which is recognized nationally by the U.S. Forest Service, the National Park Service, the Bureau of Land Management and many state and local fire agencies.

General Education Requirements:

Prerequisites: Major in Forestry, Forest Operations, Bioproducts & Bioengineering, Parks, Recreation, and Tourism, or Ecology and Environmental Sciences.

Course Typically Offered: Spring

Credits: 0-1

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: Quantitative Literacy.

Prerequisites: SFR 107 or permission

Course Typically Offered: Spring

Credits: 3

SFR 207 - Forest Field Skills and Management

Field course designed to provide professional, hands-on training for all forest resource students in field safety, field measurement techniques, wildlife monitoring, best management practices for harvest-roads and stream crossings, chainsaw operation, fire suppression training, lumber grading, and situational awareness around active forest equipment. Students need to have completed First Aid and CPR training for loggers within the past 10 months.

General Education Requirements:

Prerequisites: SFR 201 and SFR 205

Course Typically Offered: Summer

Credits: 2

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.

General Education Requirements:

Prerequisites: MAT 116 or MAT 122 or a passing score on UM Math Placement Exam #3.

Course Typically Offered: Fall

Credits: 4

SFR 209 - Chain Saw and Fire Training

A field course leading to certification in Level 1 chain saw safety training and US Forest Service Red Card fire training. Additionally, field safety will be discussed.

General Education Requirements:

Prerequisites: SFR 201

Course Typically Offered: Summer

Credits: 1

SFR 213 - Forest Operations Field Tour

Will observe different timber harvesting operations and machines through field visits and assess at multiple scales with application to integrated management of forest trees, wildlife, water, and soil. Planning and implementation of forest operations systems for various forest stand conditions will be examined. This course intends to introduce associated ecological, social, policy, and ethical issues in forestry, thereby, preparing future forest resource professionals for operational management under varying objectives and site conditions.

General Education Requirements:

Prerequisites: Sophomore standing

Course Typically Offered: Spring

Credits: 1

SFR 215 - Introduction to Sustainable Materials and Technology

Introduction to sustainable materials and products (including energy) derived from the forests and other renewable resources as well as processes and technology to produce, process and convert such materials into useful products.. The fundamentals of production systems will be described through required raw material forms and processing systems. The attributes and use of these products will be described from physical, chemical, mechanical, biological, and lifecycle perspectives.

General Education Requirements: Applications of Scientific Knowledge and Population and Environmental Requirement

Course Typically Offered: Spring

Credits: 3

SFR 216 - Wood Identification

Provides basic knowledge and hands-on skills in identifying commercial wood species commonly grown in North America. The gross and minute anatomical features of hardwood and softwood species will be observed by means of a hand lens and microscope. The keys to identification for hardwood and softwood species in terms of gross and minute features will be introduced. The effects of the anatomical features on the physical, mechanical and machining properties of different wood species will be discussed. The applications of the commercial wood species will be introduced.

General Education Requirements:

Course Typically Offered: Spring

Credits: 1

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: Western Cultural Tradition and Population and the Environment

Course Typically Offered: Fall

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: Social Contexts and Institutions

Course Typically Offered: Spring

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: Cultural Diversity and International Perspectives

Course Typically Offered: Fall, odd years

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.

General Education Requirements:

Course Typically Offered: Fall

Credits: 3

SFR 301 - Field Course in Parks, Recreation and Tourism

Principles and techniques used to manage recreation opportunities in natural resource settings. Field trips are organized to reveal a diversity of recreation sites and associated planning and management by private businesses and public agencies to provide quality recreation experiences while also preserving environmental resource conditions.

General Education Requirements:

Prerequisites: Sophomore standing and permission

Course Typically Offered: Summer

Credits: 1

SFR 345 - Special Problems in Forestry

Original investigation and/or readings on forest resources problems, the subject to be chosen after consultation with staff.

General Education Requirements:

Prerequisites: Open to high-ranking juniors and seniors and departmental consent required.

Course Typically Offered: Fall, Spring, and Summer

Credits: Ar

SFR 346 - Special Problems in Sustainable Materials and Technology

Original investigation in forest engineering, the subject to be chosen after consultation with the staff. Open to high-ranking juniors and seniors.

General Education Requirements:

Prerequisites: Department consent

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.

General Education Requirements:

Prerequisites: Department consent

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.

General Education Requirements:

Prerequisites: Junior standing in EES, PRT, or WLE

Course Typically Offered: Fall

Credits: 4

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.)

General Education Requirements:

Prerequisites: Junior standing and permission of the Forestry Curriculum Committee.

Course Typically Offered: Fall, Spring, Summer

Credits: Ar

SFR 392 - Cooperative Education in Sustainable Materials and Technology

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.)

General Education Requirements:

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.)

General Education Requirements:

Prerequisites: Junior standing and permission.

Course Typically Offered: Summer

Credits: 1-16

SFR 395 - Internship for Sustainable Materials and Technology

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.

General Education Requirements:

Prerequisites: Department consent

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.

General Education Requirements:

Prerequisites: Department consent

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.

General Education Requirements:

Prerequisites: Permission.

Course Typically Offered: Fall, Spring, Summer

Credits: 0-6

SFR 398 - Field Experience in Sustainable Materials and Technology

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.

General Education Requirements:

Prerequisites: Department consent

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.

General Education Requirements:

Prerequisites: Department consent

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.

General Education Requirements:

Prerequisites: MAT 116 or MAT 122 or a passing score on UM Math Placement Exam #3.

Course Typically Offered: Fall and 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 regulation. Because of the overlap, SFR 401 and SFR 502 cannot both be taken for degree credit.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

Course Typically Offered: Fall

Credits: 2

SFR 406 - Remote Sensing of the Forest Environment

In this course, students will learn the key concepts and rationale underlying the acquisition, interpretation, processing and presentation of remote sensing imagery for forestry and natural resources applications. Students are introduced to remote sensing technology, methods and applications including airphoto interpretation; digital photogrammetry; satellite image analysis; and LIDAR forest inventory. With an emphasis on hands-on demonstrations and laboratory exercises, students will gain proficiency in working with digital imagery and other geospatial data using ArcGIS, including vegetation indices, forest classifications, land cover change maps and three-dimensional point clouds.

General Education Requirements:

Prerequisites: SFR 400 or permission; SFR 100, PSE 100, or BIO 200 recommended but not required.

Course Typically Offered: Fall

Credits: 3

SFR 407 - Forest Ecology

Biological principles and environmental factors governing the natural establishment and development of forest trees and stands. Lec 3.

General Education Requirements:

Prerequisites: SFR 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.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: WLE 200 or concurrent enrollment in SFR 407.

Corequisites: SFR 408

Course Typically Offered: Fall

Credits: 2

SFR 411 - Forestry Rules of Maine

Introductory course designed to prepare those who wish to become licensed foresters in the State of Maine for the examination required as a part of that process.

General Education Requirements:

Course Typically Offered: Spring

Credits: 1

SFR 413 - Boundary Line Identification and Deed Research

Introduction to the basics of identifying property monuments and other landmarks used in locating landowner property/boundary lines, and the techniques used in conducting a title/deed search.

General Education Requirements:

Prerequisites: Junior standing or higher in Forestry or Parks, Recreation & Tourism; or Master of Forestry; or permission

Course Typically Offered: Fall

Credits: 1

SFR 414 - Introduction to Third-Party Forest Certification

An in-depth coverage of third-party forest certification systems focusing on Maine with additional exposure to national and international applications. Topics will include how forests are certified using standards that ensure sustainability of forest management, the mechanics of forest certification and how third-party audits are conducted. The course may include a full day field trip outside of class time.

General Education Requirements:

Prerequisites: SFR 408 or SFR 446 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.

General Education Requirements:

Prerequisites: SFR 228 or permission

Course Typically Offered: Fall

Credits: 3

SFR 437 - Ecotourism: Principles, Trends, and Issues

Examines ecotourism as a growing and important sector of the tourism industry due to its focus on sustainability issues. This course covers the principles and fundamental concepts of ecotourism, and how the concept differs from other forms of alternative tourism. Contemporary issues such as marketing, governance, certification, and community engagement in both US and international contexts will be discussed via the use of case studies.

General Education Requirements:

Prerequisites: SFR 150 or permission.

Course Typically Offered: Variable

Credits: 3

SFR 439 - Biology of Woody Plants

Advanced topics in woody plant biology including growth, development, and reproduction. Emphasis on forest tree biology and tree responses to abiotic stressors. (Because of overlap, SFR 439 and SFR 349 cannot both be taken for degree credit.)

General Education Requirements:

Prerequisites: BIO 200 or SFR 100 or PSE 100

Course Typically Offered: Fall, Even Years

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: Social Contexts and Institutions

Prerequisites: ECO 120 or ECO 121

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: Social Contexts and Institutions and Ethics

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.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: Junior Standing or permission of instructor and SFR 228.

Course Typically Offered: Fall, odd years

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

General Education Requirements:

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 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: Population and Environment

Prerequisites: Junior or Senior Standing

Course Typically Offered: Fall, Odd Years.

Credits: 3

SFR 456 - Physical and Mechanical Properties of Sustainable Materials

The physical and mechanical properties of plant-based materials, including wood and wood composites, as related to basic processing techniques and their use in structural, packaging, and other applications are described.

The objectives of the course are to develop a sound understanding of the physical and mechanical properties of plant-based materials in relation to ultrastructure, environmental effects, and their application to simple structural systems. Topics related to the physical properties of wood include moisture content, moisture sorption, swelling/shrinkage of hygroscopic materials, density, porosity, thermal properties, friction, electrical properties, etc. Topics related to the mechanical properties covered include axial, flexural, shear, and impact performance, the influence of moisture, temperature, biological agents, and time on mechanical properties. Laboratory demonstrations are arranged to conduct the measurement of these properties according to ASTM standards. SFR 456 and SFR 556 cannot both be taken for degree credit.

General Education Requirements:

Prerequisites: PHY 107 or CIE 110 or Permission of Instructors

Course Typically Offered: Fall, Alternating years

Credits: 4

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)

General Education Requirements:

Prerequisites: BIO 100 or SFR 100

Course Typically Offered: Spring

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.

General Education Requirements:

Prerequisites: BIO 100 or SFR 100 or permission

Course Typically Offered: Spring

Credits: 1

SFR 460 - Sustainable Materials and Technology Manufacturing Tour

One-week inspection trip to representative manufacturers of bioproducts selected for demonstration of typical plant and forest operations. A written report is required.

General Education Requirements:

Prerequisites: Junior Standing and Forestry or Parks, Recreation and Tourism or Sustainable Materials and Technology major

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.

General Education Requirements:

Prerequisites: Junior or Senior standing

Course Typically Offered: Spring

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.

General Education Requirements:

Prerequisites: SFR 349 or Pre/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.

General Education Requirements:

Corequisites: 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.

General Education Requirements:

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: Western Cultural Tradition

Prerequisites: SFR 228

Course Typically Offered: Spring, odd years

Credits: 3

SFR 489 - Tools for Consulting Foresters

Hands-on experience with software applications and field techniques useful for creating small woodlot forest management plans including: mapping, forest inventories, resource evaluation and assessments, growth and yield programs, spreadsheets and other office software. SFR 489 and SFR 589 cannot both be taken for degree credit.

General Education Requirements:

Prerequisites: SFR 400, SFR 402 and SFR 409

Course Typically Offered: Fall

Credits: 1

SFR 490 - Small Woodlot Management

The course provides students with the experience of creating a small woodlot management plan for a forested property. The plan will incorporate state and federal guidelines. This capstone course will integrate and apply topics from across the undergraduate program.

General Education Requirements: Writing Intensive and Capstone

Prerequisites: SFR 489 and permission

Course Typically Offered: Spring

Credits: 3-4

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: Writing Intensive and Capstone

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. (May be repeated for credit until a total of 3-4 credits have been earned.)

General Education Requirements: Writing Intensive and Capstone

Prerequisites: Department consent and Senior Standing in FBB, FTY, or PRT

Course Typically Offered: Fall & Spring

Credits: 1-4

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. (Because of overlap SFR 493 and SFR 593 cannot both be taken for degree credit).

General Education Requirements: Writing Intensive and Capstone

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: Together with SFR 499', 'this course satisfies both the General Education Writing Intensive requirement and the General Education Capstone Experience requirement.

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 SFR 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: Together with SFR 498', 'this course satisfies both the General Education Writing Intensive requirement and the General Education Capstone Experience requirement.

Prerequisites: SFR 498 and senior standing.

Course Typically Offered: Fall & Spring

Credits: 2

Social Work

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.)

General Education Requirements:

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: Social Contexts and Institutions

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: Cultural Diversity and International Perspectives

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.

General Education Requirements:

Prerequisites: PSY 100 and SOC 101 or permission.

Course Typically Offered: Fall

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.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: SWK 350 or permission.

Course Typically Offered: Spring

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.

General Education Requirements:

Course Typically Offered: Fall

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.

General Education Requirements:

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: Social Contexts and Institutions and Writing Intensive

Prerequisites: SWK 320

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.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: SWK 462.

Course Typically Offered: Spring

Credits: 3

SWK 485 - Mental Health and Work in Social Work Practice

This course will examine work as the basis for human meaning, analyze the barriers to gainful employment experienced by people with psychiatric disability, and then apply informed knowledge and skill of social service personnel to supporting successful work activity for persons with psychiatric disability.

Course Typically Offered: Fall

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.

General Education Requirements:

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: Capstone

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.

General Education Requirements:

Prerequisites: Permission.

Course Typically Offered: Fall, Spring, Summer

Credits: 1-3

Sociology

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: Social Contexts and Institutions

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: Social Contexts and Institutions and Cultural Diversity and International Perspectives

Prerequisites: SOC 101 or permission.

Course Typically Offered: Fall

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: Social Contexts and Institutions

Prerequisites: SOC 101 or permission.

Course Typically Offered: Fall

Credits: 3

SOC 219 - Statistical Reasoning in Sociology

The use of statistical methods in sociological research. Topics include descriptive and inferential statistics and hypothesis testing. Special emphasis place on sociological applications of statistical techniques, an understanding of when they are appropriate to use, and the information they yield.

General Education Requirements: Quantitative Literacy

Prerequisites: SOC 101 or permission

Course Typically Offered: Variable

Credits: 3

SOC 220 - Sociology of Deviance

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: Social Contexts and Institutions

Prerequisites: SOC 101 or permission.

Course Typically Offered: Variable

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: Social Contexts and Institutions

Prerequisites: SOC 101 or permission.

Course Typically Offered: Every Year

Credits: 1-3

SOC 290 - Research Methods in Sociology

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: Writing Intensive

Prerequisites: Junior standing and 6 hours of sociology courses or permission.

Course Typically Offered: Spring

Credits: 3

SOC 291 - Qualitative Reasoning in Sociology

Exploration of the use of qualitative methods of data collection and analysis in sociological research. Topics include field research, interviewing, and qualitative research design. Special emphasis on hands-on exercises.

General Education Requirements:

Prerequisites: SOC 101 and SOC 290 or permission

Course Typically Offered: Spring, Alternating years

Credits: 3

SOC 308 - Problems of Violence and Terrorism

This course examines terrorism-related violence, activities, and organizations in the United States and abroad. Students will learn about the historical context for understanding domestic and homegrown violent extremism, emerging trends in violent extremism and terrorism, recruitment and radicalization, and the institutional and behavioral responses to terrorism. By the end of this course, students will understand how terrorism and violent extremist organizations are the result of unique historical and cultural forces, and how they are more dynamic and complex than previously understood. SOC 308 and CRJ 308 cannot both be taken for credit.

General Education Requirements: Ethics and Cultural Diversity and International Perspectives

Prerequisites: SOC 101 or CRJ 114; Junior or Senior standing; or with permission

Course Typically Offered: Spring

Credits: 3

SOC 310 - Food Systems and Social Change

This course investigates food systems as social institutions, considering both how they meet human needs and how they reflect and reproduce social and environmental inequalities. It focuses on systemic causes of and responses to food insecurity and malnutrition and considers critiques of food systems developed from perspectives of food democracy, food justice, and food sovereignty. Learning in this course concentrates on (1) understanding historical and social contexts of food systems, (2) exploring values and positions involved in contemporary debates about food systems, and (3) gaining knowledge of food as an arena for practical, change-oriented activism.

General Education Requirements: Ethics and Social Context and Institutions

Prerequisites: SOC 101 and Junior or Senior; or with permission

Course Typically Offered: Spring

Credits: 3

SOC 315 - Environmental Sociology

Analysis of causes and impacts of and societal responses to environmental problems, with attention to institutional arrangements, social inequalities, and collective action. Introduction to theoretical perspectives and research approaches in the subfield of environmental sociology. Investigation of how environmental sociology can inform public understanding and environmental policy and activism.

General Education Requirements: Population and Environment

Prerequisites: SOC 101 and Junior or Senior; or with permission

Course Typically Offered: Spring

Credits: 3

SOC 324 - Domestic Violence

This class focuses on the extent, nature, causes, and consequences of domestic violence in the United States. Specifically, the course focuses on intimate partner violence, child abuse, child-to-parent abuse, elder abuse, and related topics. This course revolves around three themes: 1) gaining knowledge and insight about domestic violence, 2) understanding the social context of domestic violence, 3) evaluating criminal justice responses to domestic violence. SOC 324 and CRJ 324 cannot both be taken for credit.

General Education Requirements:

Prerequisites: SOC 101 or CRJ 114 and Junior or Senior; or with permission

Course Typically Offered: Spring

Credits: 3

SOC 325 - 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: Social Contexts and Institutions

Prerequisites: SOC 101 and junior or senior standing or permission.

Course Typically Offered: Fall

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: Social Contexts and Institutions and Cultural Diversity and International Perspectives

Prerequisites: 6 hours of sociology or WGS 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: Ethics and Social Contexts and Institutions

Prerequisites: PSY 100 or SOC 101 or permission.

Course Typically Offered: Spring

Credits: 3

SOC 338 - Race and Ethnicity

Explores dominant/subordinate relations nationally and internationally with emphasis on socially defined racial and ethnic groups. Origins, nature, and consequences of racial/ethnic oppression and inequality; historical and social contexts of intergroup relations and conflicts; implications of changing racial/ethnic diversity.

General Education Requirements: Cultural Diversity & International Perspective and Social Contexts & Institutions

Prerequisites: SOC 101 and SOC 201 or permission.

Course Typically Offered: Variable

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.

General Education Requirements:

Prerequisites: 6 hours of sociology or permission.

Course Typically Offered: Variable

Credits: 3

SOC 360 - 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.

General Education Requirements:

Prerequisites: SOC 101 and SOC 290 or permission

Course Typically Offered: Fall

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. While senior students will typically complete SOC 499 as their capstone experience, in rare circumstances students may conduct a significant piece of sociological research with a faculty mentor.. Students who take this course may choose to substitute it for SOC 499-Senior Capstone to satisfy both the Sociology and General Education capstone requirements.

General Education Requirements:

Prerequisites: Permission; Sociology major with senior standing and a minimum GPA in sociology courses of 3.5; SOC 290, 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.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: permission.

Course Typically Offered: Fall

Credits: 1-3

SOC 498 - Departmental Projects II

No description available.

General Education Requirements:

Prerequisites: permission.

Course Typically Offered: Spring

Credits: 1-3

SOC 499 - Senior Capstone

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: Capstone

Prerequisites: Sociology major with senior standing; SOC 290 and SOC 460 or permission.

Course Typically Offered: Spring

Credits: 3

Spanish

SPA 101 - Elementary Spanish I

A systematic study of the basics of the Spanish language. Equal emphasis on developing reading, comprehension, speaking and writing skills. For students with no previous study of Spanish or fewer than two years in high school. Students cannot take both SPA 101 and SPA 109 for credit.

General Education Requirements: Cultural Diversity and International Perspectives

Course Typically Offered: Fall & Summer

Credits: 3

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: Cultural Diversity and International Perspectives

Prerequisites: SPA 101 or SPA 109 or equivalent.

Course Typically Offered: Spring, Summer

Credits: 3

SPA 109 - Spanish for the Medical Professions

In response to the ever-growing Spanish-speaking population in the United States, this course will address the specific Spanish communications skills required by those students who intend to pursue careers in medical or health-care fields. This course will focus on medical situations with Spanish-speaking patients and/or family members with limited English. It will emphasize technical vocabulary, idiomatic expressions, and grammar, as well as cultural awareness. This course is the equivalent to SPA 101. SPA 101 and SPA 109 cannot both be taken for credit

General Education Requirements: Cultural Diversity and International Perspectives

Course Typically Offered: Fall

Credits: 3

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: Cultural Diversity and International Perspectives

Course Typically Offered: Fall

Credits: 6

SPA 203 - Intermediate Spanish I

An integrated approach using audio-visual materials and reading texts of a literary and/or cultural nature to strengthen comprehension, reading, writing, and speaking. Includes a systematic but gradual review of the essentials of Spanish grammar.

General Education Requirements: Cultural Diversity and International Perspectives

Prerequisites: SPA 102 or equivalent.

Course Typically Offered: Fall

Credits: 3

SPA 204 - Intermediate Spanish II

An integrated approach using audio-visual materials and reading texts of a literary and/or cultural nature to strengthen comprehension, reading, writing, and speaking. Includes a systematic but gradual review of the essentials of Spanish grammar.

General Education Requirements: Cultural Diversity and International Perspectives

Prerequisites: SPA 203 or equivalent.

Course Typically Offered: Spring

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: Cultural Diversity and International Perspectives and Writing Intensive

Prerequisites: SPA 204 or SPA 217 or SPA 300 level or higher course

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: Cultural Diversity and International Perspective and Writing Intensive

Prerequisites: SPA 204 or SPA 217 or SPA 300 level or higher course

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. May be taken either before or after SPA 308.

General Education Requirements: Cultural Diversity and International Perspectives', 'Western Cultural Tradition and Writing Intensive Requirements.

Prerequisites: Any SPA 300 level or higher course

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: Cultural Diversity and International Perspectives

Prerequisites: Any SPA 300 level or higher course

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: Cultural Diversity and International Perspectives and Writing Intensive

Prerequisites: SPA 204 or SPA 217 or SPA 300 level or higher course

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: Cultural Diversity and International Perspectives

Prerequisites: SPA 204 or SPA 217 or SPA 300 level or higher course

Course Typically Offered: Variable

Credits: 3

SPA 311 - Latinos in the U.S.

Hispanics are the fastest growing segment of the U.S. population, and much of that growth is driven by immigration. In this course we cover: the definition of immigration, the Latino experience in the United States, and Latinos in Maine. We approach these topics through different types of authentic material: literature (stories, poems, and excerpts from novels), newspaper and magazine articles, blogs, songs, plays, movies, television, radio, video clips, audio clips (podcasts) and art (graffiti, mural, painting, digital art, cartoon, and photo). We also talk with Latino immigrants from different countries of origin. Students will improve listening, speaking, reading, and writing in Spanish.

The course will be taught entirely in Spanish and the readings will be in the target language.

General Education Requirements: Cultural Diversity or International Perspectives

Prerequisites: SPA 204 or SPA 217 or SPA 300 level or higher course

Course Typically Offered: Alternate years.

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: Cultural Diversity and International Perspectives

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.

General Education Requirements:

Prerequisites: Any SPA 300 Level course

Course Typically Offered: Variable

Credits: 1-3

SPA 401 - Golden Age

A survey of the rich cultural output of one of the most powerful and complicated empires in human history. Through critical readings in the lyric poetry, drama, and prose fiction of the 16th and 17th centuries, this course seeks to investigate the lasting cultural legacies of the Spanish empire's projects of colonial exploration and expansion.

General Education Requirements: Cultural Diversity and International Perspectives and Western Cultural Tradition

Prerequisites: SPA 307 or SPA 308 or permission of the instructor.

Course Typically Offered: Spring, Odd Years

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: Cultural Diversity and International Perspectives

Prerequisites: SPA 307 or SPA 308 or permission.

Course Typically Offered: Variable

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: Cultural Diversity and International Perspectives

Prerequisites: SPA 307 or SPA 308 or permission

Course Typically Offered: Variable

Credits: 3

SPA 414 - History of the Spanish Language

An historical panorama of the development of Spanish from late Latin on the Iberian Peninsula to the globally dynamic language of our present. Students will study the modern Spanish language in Europe, Africa, the Americas, and around the world, how this language came to be, and how it continues to change. Linguistic notions gleaned in this course have relevance to other modern languages, including English, as well as to the idiosyncrasies and common points of confusion in Spanish.

General Education Requirements: Cultural Diversity or International Perspectives and Writing Intensive

Prerequisites: SPA 307 or SPA 308 or permission; INT 410 suggested

Course Typically Offered: Spring

Credits: 3

SPA 415 - Feminism and Literature

Feminism is one of the most consequential intellectual traditions of the West. This course will examine this far-reaching current of thought in the global literature of the Spanish language, from medieval precursors to twenty-first-century texts.

General Education Requirements: Western Cultural Tradition and Social Contexts and Institutions

Prerequisites: SPA 307 or SPA 308 or permission

Course Typically Offered: Fall

Credits: 3

SPA 416 - Modernism(o) and Avant-Garde

Across the Hispanic world, writers like Cesar Vallejo, Federico Garcia Lorca, Ruben Dario, Rosa Chacel, and Jorge Luis Borges, along with visual artists like Salvador Dali, Maruja Mallo, and Pablo Picasso define what it means to be modern at the beginning of the twentieth century. This course examines and explores the complicated topic of modernity by surveying Hispanic art and literature from about 1898 to 1945.

General Education Requirements: Artistic and Creativity Expression and Western Cultural Tradition

Prerequisites: SPA 307 or SPA 308 or permission

Course Typically Offered: Spring, alternating years

Credits: 3

SPA 419 - Rebels & Realists in 19th-Century Literature

This course analyzes a broad selection of literary texts from the 19th century, a period of revolutions, rapid industrialization, and radical politics. A particular emphasis is placed on Romanticism and Realism and their legacies in contemporary culture.

General Education Requirements: Western Cultural Traditions

Prerequisites: SPA 307 or 308

Course Typically Offered: Fall, Alternating

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: Social Contexts and Institutions and Artistic and Creative Expression

Prerequisites: SPA 307 or SPA 308 or permission

Course Typically Offered: Variable

Credits: 3

SPA 430 - Seminar in Advanced Grammar

SPA 430 is a grammar composition and revision course whose purpose is to help students solve written expression problems and prepare them for other advanced courses of the Spanish program. Students are expected to enroll in this course with a strong basic knowledge of the grammatical structures of Spanish and a desire to polish their expression, resolve doubts, and explore the idiosyncrasies of the language. Various grammatical structures and writing strategies will be covered.

Prerequisites: SPA 307 or SPA 308

Course Typically Offered: Fall, Alternating years

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: Cultural Diversity and International Perspective and Writing Intensive

Prerequisites: SPA 307 or SPA 308 or permission

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: Cultural Diversity and International Perspectives

Prerequisites: SPA 307 or SPA 308 or permission

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: Cultural Diversity and International Perspectives', 'Western Cultural Tradition and Capstone Experience

Prerequisites: Senior standing and permission.

Course Typically Offered: Fall, Spring, and Summer

Credits: 0-3

SPA 498 - Projects in Spanish II

Independent study on topics selected by student and instructor.

General Education Requirements: Cultural Diversity and International Perspectives

Prerequisites: Permission.

Course Typically Offered: Spring

Credits: 1-3

Sports Management

SPT 250 - Introduction to Sport Management

The course is industry centered providing an overview of all facets of sports management and the sports industry. The course will cover major industry segments including youth, amateur, intercollegiate and professional sport as well as ancillary areas specific to the sport industry such as sport agencies, gambling, esports, sports retail, etc. Sport concentration areas covered in this course are event management, marketing, communications, law, facility management, esports, sport tourism, sales, analytics, PR, finance, and economics.

General Education Requirements: Writing Intensive

Prerequisites: A grade of C- or better in MGT 101

Course Typically Offered: Fall

Credits: 3

SPT 290 - Introduction to Topics in Sports Management

Introduces student to aspects of the Sports Management discipline. Special topics may include areas relevant to any aspect of management at an introductory level. This course may be repeated for credits.

Course Typically Offered: Variable

Credits: 1-3

SPT 355 - Sport Marketing

Sports are uniquely creative and there are many aspects that cause them to behave differently from other brands, businesses, and organizations. This course is intended to introduce students to the world of sports business from a strategic marketing perspective. An historical perspective of the industry will provide the necessary framework to gain insight into the present and future sports marketing environment. The basic principles of marketing and marketing management as applied to the sports industry will be emphasized. Specific topics include segmentation, product, distribution, and pricing decisions, marketing through sport sponsorships, endorsements, licensing, sport media, marketing communications, and emerging issues in sports marketing.

Prerequisites: MKT 270

Course Typically Offered: Spring

Credits: 3

SPT 485 - Sport Management Practicum

This course applies management, marketing, finance, and laws to a broadly-defined sport field. Through hands-on learning, students are given the opportunity to study, analyze, and practice management in for-profit and non-profit sport and recreation organizations and relevant industries in the form of a semester-long team project.

General Education Requirements:

Prerequisites: SPT 355 and SPT 250; Sports Management Major

Course Typically Offered: Fall

Credits: 3

SPT 490 - Special Topics in Sports Management

Study of various aspects of functional areas of sports management. Topics vary depending on faculty and student interests. May be repeated for credit if the topics differ.

Prerequisites: Junior Standing

Course Typically Offered: Variable

Credits: 1-3

Statistics

STS 132 - 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.

Due to overlapping content, course repeat rules are applicable for STS 215 and STS 232.

General Education Requirements: Quantitative Literacy

Prerequisites: Two years of high school math required.

Course Typically Offered: Fall, Spring, Summer

Credits: 3

STS 215 - Introduction to Statistics for Business and Economics

For students in the Maine Business School 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.

Due to overlapping content, course repeat rules are applicable for STS 215 and STS 232.

General Education Requirements: Quantitative Literacy

Course Typically Offered: Fall and Spring

Credits: 3

STS 235 - Introduction to Statistical Methods

Introductory applied statistics for students with a background in single-variable calculus. Topics include descriptive statistics and graphical methods, probability and probability functions, discrete and continuous probability distributions, linear regression, fitting of models to real data sets, and statistical inference. Students will also gain some experience in using software to implement statistical methods.

Due to significant content overlap, credit will not be given for both STS 332 and STS 235.

Prerequisites: Grade of C or higher in MAT 127

Course Typically Offered: Fall and Spring

Credits: 3

STS 332 - Statistics for Engineers

Statistical methods applicable to engineering including theory and application of classical and nonparametric methods. Due to significant content overlap, credit will not be given both for STS 235 and STS 332.

General Education Requirements:

Prerequisites: A grade of C or better in MAT 127.

Course Typically Offered: Fall & Spring

Credits: 3

STS 400 - Topics in Statistics

Topics in statistics not regularly covered in other courses. Content varies to suit current needs. May be repeated for credit.

Prerequisites: Departmental Consent

Course Typically Offered: Variable

Credits: 1-3

STS 434 - Probability Theory

A first course in calculus-based probability theory. Topics include counting techniques, discrete and continuous random variables, expected value and standard deviation, independence, conditional probability, important discrete and continuous distributions, limit laws such as the central limit theorem, and multivariate distributions.

General Education Requirements:

Prerequisites: A grade of C or better in MAT 228.

Course Typically Offered: Fall & Spring

Credits: 3

STS 435 - Introduction to Mathematical Statistics

An introduction to the theory and methods of statistical inference. Topics include point and interval estimation, hypothesis testing, linear regression and correlation, and analysis of variance.

General Education Requirements:

Prerequisites: A grade of C or better in STS 434.

Course Typically Offered: Spring

Credits: 3

STS 437 - Statistical Methods in Research

An introduction to analysis of variance and regression analysis using a unifying approach to theory; applications and illustrations from many fields will be included.

General Education Requirements:

Prerequisites: A grade of C or better in STS 132, STS 235, STS 332, or STS 434 or permission.

Course Typically Offered: Fall

Credits: 3

Surveying Engineering Technology

SVT 100 - Introduction to Surveying Technology

Discussion of the major topics in surveying engineering technology professional practice including measurement science, boundary surveying and mapping science. Professionalism and licensure in surveying practice will also be discussed in depth. Guest lectures by industry leaders and occasional field trips are utilized in course instruction.

General Education Requirements:

Course Typically Offered: Fall

Credits: 1

SVT 101 - Basic Surveying Field and Office Processes

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. RTK GNSS and creating ground surfaces is included.

General Education Requirements:

Corequisites: MAT 122 or equivalent

Course Typically Offered: Fall and Spring

Credits: 3

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, the mathematics of horizontal and vertical curves, area computations, volume computations, mapping, introduction to geographic information systems, and introduction to global positioning systems.

General Education Requirements:

Prerequisites: None.

Course Typically Offered: Fall and Spring

Credits: 3

SVT 110 - Instrumentation and Data Collectors

Introduction to survey instrumentation, total stations, levels, GNSS receivers and data collectors, used in plane surveying applications of surveying engineering. Methods for processing, display, and presentation of survey observations will also be demonstrated. Basic concepts of photogrammetry and lidar data collection will be introduced as an alternative to traditional field methods.

General Education Requirements:

Course Typically Offered: Fall

Credits: 1

SVT 121 - AutoCAD and Cartography for Surveyors I

Introduces 2D computer aided drafting and design using AutoCAD. Covers user interface, drawing setup, layers, attributes, file management, coordinate systems, view, draw and modify commands, display control, text styles, and dimensioning. Also includes instruction in key elements of cartography essential to the clear communication of surveying and mapping information. Students who take SVT 121 after CIE 101 will only receive credit and grade for SVT 121.

Must have a PC (not Mac) laptop that will run Autodesk software.

General Education Requirements:

Course Typically Offered: Fall and Spring

Credits: 3

SVT 122 - AutoCAD for Surveyors II

Using Carlson 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.

General Education Requirements:

Prerequisites: SVT 121.

Course Typically Offered: Fall and 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.

General Education Requirements:

Prerequisites: CET 202 or SVT 202

Course Typically Offered: Fall and Spring

Credits: 3

SVT 202 - Route & Site Surveying

Study of surveying procedures in horizontal construction. Explanation of profile and cross section plans. Course work includes computations for horizontal coordinate layout, surface grading layout, cross section layout, horizontal curve layout, and vertical curve layout. Material includes geometry of vertical and horizontal curves, including horizontal compound and reverse curves. Volume computations and surface modeling are introduced. Methods utilizing total stations, levels and GNSS receivers are emphasized.

General Education Requirements:

Prerequisites: SVT 101 and MAT 116 or MAT 126

Course Typically Offered: Fall and 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: Western Cultural Tradition and Writing Intensive

Prerequisites: SVT 202 or two years of surveying practice

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.

General Education Requirements:

Prerequisites: SVT 221; Prerequisite or Corequisite: SVT 122; or permission of instructor.

Course Typically Offered: Fall

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.

General Education Requirements:

Prerequisites: SVT 122 and SVT 221

Course Typically Offered: Fall

Credits: 1

SVT 331 - Photogrammetry

Includes procedures and methods used for deriving metric information from photographs, analog analytical and digital processes for using serial photographs in production of digital maps, flight planning and cost estimation in aerial mapping work. Introduction to photo-coordinate measurement devices and their calibration. Image matching/Structure from Motion, aerotriangulation, UAV principles, Lidar.

General Education Requirements:

Prerequisites: CET 101 or SVT 101

Course Typically Offered: Spring

Credits: 3

SVT 332 - Engineering for Surveyors

The study of topics related to engineering site work, highway design, drainage, hydrology, hydraulics, on-site sewer design, water system design, erosion control, sedimentation control, conduits, wetlands delineation, soil mapping, and flood plain mapping.

General Education Requirements:

Prerequisites: CET 101 or SFR 208 or SVT 101

Course Typically Offered: Spring

Credits: 3

SVT 333 - Team Workflows in Surveying Practice

Through weekly readings, videos, case studies, teamwork exercises and reflective essay writing students will demonstrate their understanding of teamwork in surveying. Focus is on unique surveying team issues: shrinking sizes of field teams, individual remote field and office work, mentoring in professional licensure and multidisciplinary professional projects.

Prerequisites: SVT 202 and SVT 221

Credits: 1

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, complex coordinate geometry computations.

General Education Requirements:

Prerequisites: CET 202 or SVT 202

Course Typically Offered: Fall

Credits: 3

SVT 352 - Practical Field Operations

Study of managing survey instrumentation and project requirements to make optimal use of instrumentation and methods for a survey project. Includes suitable use of total station, levels, and GNSS receivers for survey observations. Overview of survey regulations, standards, specifications, contract documents, and instrument specifications. Data collection field techniques to automate office linework, optimizing feature coding and descriptive abilities. Optimization of data collection and layout. Survey documentation and reporting.

General Education Requirements:

Prerequisites: CET 202 or SVT 202

Course Typically Offered: Spring

Credits: 3

SVT 418 - Fundamentals of Surveying Exam Overview

This course is a review of the survey elements of the NCEES Fundamental of Surveying (FS) nationwide examination which leads to licensure as a professional land surveyor. Course format is practice examinations on FS survey topics for students to assess their FS exam preparedness and for develop for their personal study planning. This course is not a substitute for instruction and academic coursework in the covered topics.

General Education Requirements:

Prerequisites: Junior standing or permission of instructor.

Course Typically Offered: Fall

Credits: 1

SVT 437 - Practical GPS

Presentation of all types of GNSS equipment with their uses and limitations, GNSS 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 GNSS, execution of all components (planning, field collection, downloading, processing, and adjustment) of a GNSS survey where raw data is collected or real time kinematic (RTK) GNSS vectors are processed in a network adjustment for control work, use of RTK GNSS in collection of a topographic survey.

General Education Requirements:

Prerequisites: SVT 341 or equivalent.

Course Typically Offered: Fall

Credits: 3

SVT 451 - Survey Business Law

Studies the fundamental legal concepts and the development and application of law on society, business, engineering and surveying. 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: Social Contexts and Institutions and Writing Intensive

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: Writing Intensive

Course Typically Offered: Fall & Spring

Credits: 3

SVT 490 - SL: Surveying Capstone

A long-term professional project-based course which integrates all components of previous surveying coursework. The project will be developed from an initial project description, through project planning, field collection, office processing, computer-aided drafting, final product preparation, through an oral presentation of results.

General Education Requirements: Capstone

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.

General Education Requirements:

Prerequisites: Junior or senior standing.

Course Typically Offered: Variable

Credits: Ar

Theatre

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: Artistic and Creative Expression

Course Typically Offered: Fall, Spring, Summer

Credits: 3

THE 112 - Dramatic Literature

The role of "the play" 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: Western Cultural Tradition

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: Artistic and Creative Expression

Course Typically Offered: Fall & Spring

Credits: 3

THE 120 - Fundamentals of 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.

General Education Requirements:

Corequisites: THE 121

Course Typically Offered: Fall

Credits: 3

THE 121 - Stagecraft Laboratory

Provides hands-on experience, through special projects, designed to reinforce specific technical skills discussed and demonstrated in THE 120.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

Corequisites: THE 131

Course Typically Offered: Spring

Credits: 3

THE 131 - Introduction to Costume Construction Laboratory

Laboratory in costume production work.

General Education Requirements:

Prerequisites: Required for theatre majors.

Corequisites: THE 130

Course Typically Offered: Spring

Credits: 1

THE 200 - Fundamentals of Design

This course explores the practice of theatrical design, and prepares the student for continued coursework in scenery, lighting, and costume design. Emphasis is placed on the design process, including visual research, script analysis, and communication through sketches, renderings, and/or scale models. The course includes discussion, demonstrations, and a series of hands-on design projects.

General Education Requirements: Artistic and Creative Expression

Prerequisites: THE 120

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.

General Education Requirements:

Prerequisites: THE 117 or permission.

Course Typically Offered: Fall & Spring

Credits: 3

THE 212 - Script Analysis

This course explored techniques, strategies, and methods for reading and interpreting dramatic literature for the purpose of creative and theatrical goals of play production. Students practice close reading of a range of scripts in order to identify structural, narrative, contextual, and creative elements that inspire artistic choices in the field of theatre.

General Education Requirements:

Course Typically Offered: Fall

Credits: 3

THE 216 - Fundamentals of Directing

Covers basic principles of stage directing including, conceiving a theatre production, choosing and interpreting performance texts, creating and conveying vision, collaborating with designers/crew, working with actors, leading rehearsals, staging action, and crafting a performance. Consequently, this is a "hands-on" course, in which students choose, possibly write, cast work, with actors, and direct their own small stage production.

General Education Requirements: Artistic and Creative Expression

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.

General Education Requirements:

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.

General Education Requirements:

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: Cultural Diversity and International Perspectives and Writing Intensive

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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

Course Typically Offered: Alternate years

Credits: 3

THE 360 - Global 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: Cultural Diversity and International Perspectives and Writing Intensive

Prerequisites: THE 212

Course Typically Offered: Spring

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.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: THE 117 and two credits in DAN or permission

Course Typically Offered: Spring

Credits: 3

THE 415 - Capstone Experience in Theatre

A synthesis of the major's knowledge in a selected area of interest within theatre. Students will create a professional portfolio based on their cumulative experiences, and will develop a Capstone Project, for completion in THE 416.

General Education Requirements: Capstone Experience and Artistic and Creative Expression

Prerequisites: Senior standing.

Course Typically Offered: Fall & Spring

Credits: 3

THE 416 - Theatre Capstone Project

Students will be able to practically apply skills in their area of specialty to a culminating thesis project, devised and planned during the THE 415 Capstone Seminar.

General Education Requirements: Capstone Experience

Prerequisites: THE 415

Course Typically Offered: Spring

Credits: 1

THE 460 - Topics in Global Theatre

This course will investigate specific themes and topics in global theatre and performance, adapting its lens to an ever-shifting landscape of global current events. Students will engage with diverse creative, transcultural, and transhistorical responses to historical global theatrical forms and performance practices. The course will examine a range of socio-political, historical, and aesthetic aspects of global performance practices through the ages, and culminate in student-driven written Praxis as Research projects. Topics will vary.

This course may be repeated for credit as long as the topic for the section being taken is different from previously taken topics.

General Education Requirements: Cultural Diversity and International Perspectives and Writing Intensive

Prerequisites: Junior Standing

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.

General Education Requirements:

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.

General Education Requirements:

Course Typically Offered: Fall & Spring

Credits: 3

THE 497 - Independent Study in Theatre I

No description available.

General Education Requirements:

Prerequisites: permission.

Course Typically Offered: Fall & Summer

Credits: 1-3

THE 498 - Independent Study in Theatre II

No description available.

General Education Requirements:

Prerequisites: permission.

Course Typically Offered: Spring, Summer

Credits: 1-3

Theatre Practicum

THP 101 - Theatre Practicum, Acting

THP 101 is designed to give the student supervised practical experience in acting. Students taking this course will collaborate in the rehearsal process to develop and perform an acting role in a Division of Theatre/Dance theatrical production.

Course note: May be repeated for credit for a total of 4 completions and 4 total credits.

Prerequisites: Department consent

Course Typically Offered: Fall and Spring

Credits: 0-3

THP 102 - Theatre Practicum, Design

THP 102 is designed to give the student supervised practical experience in theatrical design. Students taking this course will collaborate in the design process to develop a design for a Division of Theatre/Dance theatrical production. Possible design areas include scenic design, lighting design, costume design, hair and makeup design, sound design, and projection design.

Course note: May be repeated for credit with 4 total completions and 4 total credits.

Prerequisites: THE 200 and Department consent

Course Typically Offered: Fall and Spring

Credits: 0-3

THP 103 - Theatre Practicum, Technical

THP 103 is designed to give the student supervised practical experience in a technical theatre role. Students taking this course will collaborate in the build and tech process for a Division of Theatre/Dance theatrical production. Possible technical theatre roles include technical director, master electrician, stage manager, assistant stage manager, props master, scenic charge artist, scenic artist, scene shop crew, board op, run crew, wardrobe, and costume shop crew.

Course note: May be repeated for credits with 6 total completions and 6 total credits.

Prerequisites: Department consent

Credits: 0-3

THP 104 - Theatre Practicum, Directing

THP 104 is designed to give the student supervised practical experience in directing. Students taking this course will direct or assistant direct a Division of Theatre/Dance theatrical production.

Course note: May be repeated for credit for a total of 4 completions and 4 total credits.

Prerequisites: THE 216 and department consent

Course Typically Offered: Fall and Spring

Credits: 0-3

THP 105 - Theatre Practicum, Dramaturgy/Playwriting

THP 105 is designed to give the student supervised practical experience in Dramaturgy/Playwriting. Students taking this course will be a dramaturg or playwright for a Division of Theatre/Dance theatrical production.

Course note: Course may be repeated for credit with 4 total completions and 4 total credits.

Prerequisites: Department consent

Course Typically Offered: Fall and Spring

Credits: 0-3

University Studies

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.

General Education Requirements:

Prerequisites: Bachelor of University Studies major; others by permission.

Course Typically Offered: Fall & Spring

Credits: 1

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: Writing Intensive

Course Typically Offered: Fall & Spring

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.

General Education Requirements:

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: Capstone

Prerequisites: senior standing, Bachelor of University Studies major.

Course Typically Offered: Fall & Spring

Credits: 3

Wildlife Ecology

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.)

General Education Requirements:

Prerequisites: Wildlife Ecology major or permission

Course Typically Offered: Fall

Credits: 1

WLE 150 - Wildlife Field Trip

A field-based course designed to introduce wildlife ecology students to various aspects of fish and wildlife management.

(Pass/Fail Grade Only.)

General Education Requirements:

Prerequisites: WLE 100; first-year Wildlife Ecology major.

Course Typically Offered: Spring

Credits: 1

WLE 200 - Ecology

Ecology is the study of how distribution and abundances of organisms over time and space relate to major physical, chemical, geological, historical, biological, evolutionary, and energetic factors. This course provides students with a sound and relevant ecological framework through which they can better understand and explain the past and present, and prepare for the future, on a complex and rapidly changing planet whose productivity and life-support capacity is increasingly eroded by the industrialized human economy. WLE 200 is required for undergraduates majoring in Wildlife, Fisheries, and Conservation Biology but is suitable for students in most majors.

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: Minimum grade of C- in BIO 100 and BIO 200 or SMS 201, or instructor's permission.

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: Quantitative Literacy

Prerequisites: A minimum grade of C or better in MAT 122 or in MAT 116, or C- in MAT 126, and Grade of C- in WLE 200 and WLE 201 or SMS 300 or BIO 319.

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: Population and the Environment

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.

General Education Requirements:

Prerequisites: Department Consent and student must meet these requirements: WLE 100 and a C- or better in WLE 200, WLE 201, and WLE 220. 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. Independent field work required.

General Education Requirements: Population and the Environment

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.

General Education Requirements:

Prerequisites: BIO 329 and BIO 319 or SFR 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.

Course Note: Occasionally, field trips will extend past 5:00 pm and one-weekend field trip is required

General Education Requirements:

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.

General Education Requirements:

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.

General Education Requirements:

Corequisites: WLE 410

Course Typically Offered: Fall

Credits: 1

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: Lab in the Basic or Applied Sciences

Prerequisites: WLE 200 or equivalent or permission.

Course Typically Offered: Fall

Credits: 4

WLE 431 - Wildlife Management in Forestry

Students apply knowledge of silviculture and forestry practices to management of habitat for forest wildlife species. This course covers concepts of wildlife ecology, biological diversity, ecological forestry, and wildlife habitat management. Science-based applications will focus on management practices, comparison of management options, and government guidance for managing forest wildlife habitat at varying spatial and temporal scales. Time in class is divided between two lectures (2 hr) and one lab (3 hr) period each week. Course may include field trips during class time.

General Education Requirements:

Prerequisites: SFR 408 or SFR 349 or Permission

Course Typically Offered: Spring

Credits: 3

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.

General Education Requirements:

Prerequisites: Permission.

Course Typically Offered: Fall and Spring

Credits: Ar

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.

General Education Requirements: Writing Intensive. 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 457 - Ecology and Management of Game Birds

This course provides a broad survey of topics relevant to the ecology and management of the ducks, geese, grouse, quail, and woodcock that are native to North America - species we typically consider "Game Birds" because of their popularity for human harvest. We'll place particular emphasis on species that regularly occur in Maine. In doing so we will cover a number of areas related to avian biology in general, including taxonomy, physiology, behavior, and species' conservation, and will synthesize across subjects that are relevant to wildlife ecology as a whole. The course content will include a mix of lectures, class discussions, group and independent projects, and field trips. This class is designed to meet the University requirement as a writing intensive general elective, and will mean that you will be required to complete a major written project as a component of the course and will receive feedback on your writing and have the opportunity to revise your work. One weekend field trip will be required.

General Education Requirements: Capstone Experience and Writing Intensive

Prerequisites: WLE Major; Senior Standing or instructor permission

Course Typically Offered: Spring, Even years

Credits: 3

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.

General Education Requirements:

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.

General Education Requirements:

Prerequisites: Junior Standing or permission.

Course Typically Offered: Spring

Credits: 3

WLE 479 - Wildlife Conservation in a Changing World

The course will focus on the main drivers of global change (e.g. land-use change, climate change) and how they impact the behavior, ecology and population dynamics of wild animals. Each driver will be analyzed for both the causes (e.g., what are the effects of land-use change) and the mitigation (e.g. habitat restoration). The course will contain a mix of lectures, class/home exercises, discussions of relevant journal articles, student presentations and production of a short video.

General Education Requirements:

Prerequisites: WLE 220

Course Typically Offered: Spring, Odd Years

Credits: 3

WLE 490 - Special Problems

Original investigation in wildlife work, the subject to be chosen after consultation with the staff.

General Education Requirements:

Prerequisites: Junior standing and a 3.0 GPA or higher and permission.

Course Typically Offered: Fall, Spring, Summer

Credits: Ar

Women's, Gender, and Sexuality Studies

WGS 101 - Introduction to 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, as they intersect with race, ethnicity, class, nationality, disability and other sites of social inequality.

General Education Requirements: Ethics', 'Social Contexts and Institutions', 'and Cultural Diversity and International Perspectives

Course Typically Offered: Fall, Spring, Summer

Credits: 3

WGS 103 - Introduction to Lesbian, Gay, Bisexual, Transgender, and Queer Studies

Introduces the major perspectives and issues in lesbian, gay, bisexual, transgender and queer studies, including histories and institutions, identities and representations, and cultures and subcultures.

General Education Requirements: Social Contexts and Institutions', 'and Cultural Diversity and International Perspectives

Course Typically Offered: Fall & Spring

Credits: 3

WGS 201 - Topics in Women's, Gender, and Sexuality Studies

An interdisciplinary, second-level study of topics relevant to women, gender, and sexuality. May be taken more than once for credit if the topics differs. WGS 101 is recommended as a prerequisite.

General Education Requirements:

Course Typically Offered: Fall, Spring, and Summer

Credits: 3

WGS 203 - Men and Masculinities

This course examines the social construction of masculinity in Western culture, exploring men's experiences in our society from multiple vantage points and examining the ways in which masculinity is understood, represented, and constructed in Western society. If this course was taken under as a topics course in WGS 201, it cannot be repeated for credit. It is recommended that students take WGS 101 before taking this course.

General Education Requirements: Cultural Diversity and International Perspectives and Social Context & Institutions

Course Typically Offered: Fall, Odd Years

Credits: 3

WGS 205 - Introduction to Feminist and Critical Data Analysis

The course will feature a certain tension as we learn how to leverage software and mathematical methods to analyze publicly available data to investigate the history and present of marginalized groups and social inequities. Alongside this technical and quantitative work, we will consider various critiques of quantitative methods and Western knowledge in general. WGS 101 - Intro to WGS is a recommended prerequisite.

General Education Requirements: Quantitative Literacy and Social Context and Institutions

Course Typically Offered: Fall

Credits: 3

WGS 206 - Investigating Equity

This course explores the ways in which equitable practices and mindsets result in inclusion, and whether and when inclusivity leads to diversity. After identifying the privileges at work in historical and contemporary contexts, students construct multimodal projects to represent the way/s that their everyday choices might shape their own and other's experience of equity.

Course Note: WGS 101 recommended but not required

General Education Requirements: Artistic and Creative Expression and Ethics

Course Typically Offered: Fall

Credits: 3

WGS 230 - Women, Health, and the Environment

This course examines the impact of man-made contaminants and constructs on human health. Using both standard scientific approaches and feminist analysis, we explore the connections between health issues such as cancer, autoimmune disease, infertility and gender transition, and substances in the environment and body that impact health. Students will consider possibilities for conscious change and are encouraged to engage in transformative work.

General Education Requirements: Ethics and Population and the Environment

Prerequisites: WGS 101 or permission.

Course Typically Offered: Spring, Odd Years

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.

WGS 101 is recommended before taking this course.

General Education Requirements: Artistic and Creative Expression', 'and Cultural Diversity and International Perspectives

Course Typically Offered: Fall

Credits: 3

WGS 260 - Gardening as Social Justice

This course provides an introductory look into the detailed study of gardening as both a site of social justice and as an amateur or professional practice. The practice of gardening is rooted in the histories of feminism, Native American studies, class and food insecurity, racial (in)justice, and more. This class will engage with the history and practice of gardening through an intersectional lens, to see how marginalized populations have reclaimed gardening to meet their needs. Students will also learn some of the scientific and ecological practices behind gardening. Students will work to design their own garden space, modifying and adapting their design as each week goes on, and will end the semester with a garden design of their own that has taken issues of social and environmental justice in mind. Course Note: WGS 101 recommended but not required.

General Education Requirements: Artistic and Creative Expression

Course Typically Offered: Fall

Credits: 3

WGS 270 - Gender in Native American Cultures

This course explores the concept of gender in indigenous communities of North America. Course materials will explore historical and contemporary perspectives of gender and sexual orientation to better understand how Native communities define and practice gender. NAS 101 or WGS 101 is a recommended prerequisite. (WGS 270 and NAS 270 are identical courses.)

General Education Requirements: Social Context and Institutions and Cultural Diversity and International Perspectives

Course Typically Offered: Spring

Credits: 3

WGS 280 - Intersectionality and Social Movements

A bridge between introductory WGS courses and more focused WGS courses, WGS 280 explores topics from WGS 101 and WGS 103 such as transnational feminisms, queer theory, and ecology through intersectional perspectives which reveal the interconnected and overlapping nature of social categories such as gender, class, and race. Through close examination of a variety of texts dealing with equity and diversity, students connect pedagogies and theories to activism, self-reflection and social movements.

General Education Requirements: Cultural Diversity and International Perspectives

Prerequisites: 6 hours of WGS courses, WGS 101 required or permission from instructor.

Corequisites: N/A

Course Typically Offered: Fall, Spring

Credits: 3

WGS 298 - Directed Study in Women's, Gender, and Sexuality 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.)

General Education Requirements:

Prerequisites: WGS 101 and Permission.

Course Typically Offered: Fall, Spring and Summer

Credits: Ar

WGS 301 - Intermediate Topics in Women's, Gender, and Sexuality Studies

An interdisciplinary, intermediate study of topics relevant to women, gender, and sexuality. May be taken more than once for credit if the topics differ. WGS 101 is a recommended prerequisite.

General Education Requirements:

Course Typically Offered: Fall, Spring and Summer

Credits: 3

WGS 303 - Social Movements, Media and Change

This course considers the roles of gender, race/ethnicity, sexuality, age, religion, and nationality in relation to an understanding of social movements and social change in the Modern Middle East from the 19th century to the present. The course will also assess different varieties of feminism and women's movements, so as to identify and interrogate presumptions in the west about what constitutes feminism. Alongside secondary sources, students will examine primary sources produced by social movements - pamphlets, posters, memoirs, and even YouTube videos and Instagram posts. No prior knowledge of Middle Eastern history is required and all course materials will be available in English.

General Education Requirements: Social Context and Institutions and Cultural Diversity and International Perspective

Course Typically Offered: Fall, Odd Years

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: Cultural Diversity and International Perspectives

Course Typically Offered: Spring

Credits: 3

WGS 351 - Authorizing Women's Sexualities

This course explores how 21st century women (trans and cis) in both the US and abroad use fiction, memoir, and other literary forms to resist, revise, and even reinvent heterosexist narratives about gender identity, love, sexuality, marriage and family life. How might writers use literary forms to author (and authorize) diverse ideas about women's sexualities? Multiple lenses will be used to address this question—from the interpretative practices of narrative theory to the questions that arise from gender, feminist and queer theories, to research on publishing and the literary marketplace. Students cannot receive credit for WGS 451 after passing WGS/WST 401 with a topic of Women's Sexuality.

General Education Requirements: Social Context and Institutions

Prerequisites: Junior Standing; WGS 101 or CHF 351 or permission.

Course Typically Offered: Spring

Credits: 3

WGS 360 - Gender and Cinema

This course examines the connections between gender and cinema by examining gender theory, film criticism, and the history of the opposed as well as recent activist movements around production, inclusion, and representation. The course also serves as an introduction to major developments in feminist film theory since its emergence in the 1970s. WGS 101 is a recommended prerequisite.

General Education Requirements: Artistic and Creative Expression', 'and Cultural Diversity and International Perspectives

Course Typically Offered: Fall, Even Years

Credits: 3

WGS 371 - Border-crossing: Gendered Perspectives on Modern Migration

In response to ongoing global crises of displacement and migration, writers and artists are constantly inventing ways to circumvent, challenge and soften contested borders of nation, culture, and language. Through the lens of border studies theory, and by examining diverse writing on and about borders, displacement and diaspora, this course investigates literary modes of international and intercultural border crossing and facilitates a range of multi-genre written explorations of different intercultural crossings.

General Education Requirements: Cultural Diversity and International Perspectives and Population and the Environment

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.

General Education Requirements:

Prerequisites: Junior standing and WGS 101.

Course Typically Offered: Fall and Spring

Credits: 3

WGS 410 - Feminist, Gender and Queer Theory

An introduction to the overlapping but sometimes conflicting traditions of feminist, gender, and queer theories.

General Education Requirements: Ethics and Writing Intensive

Prerequisites: 6 hours of WGS courses, including WGS 101 or permission.

Course Typically Offered: Fall

Credits: 3

WGS 411 - Internship in Women's, Gender, and Sexuality Studies

Students pursue internships in workplaces such as businesses, non-profits, and other organizations. Course meetings provide students with faculty mentorship, opportunities to troubleshoot their internship work with peers, and related course content. Topics covered may include diversity/equity/justice in the workplace, social justice in the community, correlation between academic courses and the workplace, and career-exploration/preparation. For each topic, strategies for improving workplace communication are also covered. Each student will design their internship in consultation with their host organization and the course instructor such that it meets their specific interests/goals. Internship work will vary, but typically includes activities such as research, ideation, communication, writing, public relations, editing, content development, community organizing, and other related activities.

General Education Requirements:

Prerequisites: Permission

Course Typically Offered: Fall, Spring and Summer

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.)

General Education Requirements:

Prerequisites: WST 101; junior or senior standing and permission.

Course Typically Offered: Fall, Spring and Summer

Credits: Ar

WGS 499 - Capstone

Capstone requirement: fulfilled by either WGS 410 or WGS 411, to be taken with a 0-credit WGS 499

General Education Requirements: Capstone

Corequisites: WGS 410 or WGS 411

Credits: 0

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 Student Accessibility 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 Student Accessibility 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 Student Accessibility Services via phone at 207.581.2319 or visit our website at www.umaine.edu/studentaccessibility.

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 coursework at another institution are strongly encouraged to request prior approval by completing the Domestic Study Away form. This approval will ensure that the course(s) and credits will be applicable to their plan of study when completed with an acceptable grade, credits will count toward enrollment status, and students will maintain enrollment in their degree program. 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 have no financial indebtedness to the University. Students must obtain approval for a leave of absence no later than two weeks after the start of the semester in which they take the leave.

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 and who do not enroll in the subsequent semester 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.

Retroactive Fall/Spring Term Withdrawal

** Retroactive withdrawal is defined as a request for withdrawal from ALL courses for a term that has ended.*

A retroactive withdrawal may be an option for students who were unable to complete a standard withdrawal through the Office of the Registrar or the Graduate School (if applicable). A retroactive University withdrawal is an extraordinary remedy that is only available when extenuating circumstances significantly impaired the student's ability to complete the semester and officially withdraw by the established semester deadlines as outlined in the Academic Calendar. Examples of extenuating circumstances may include, but are not limited to, a mental or physical illness, injury, or other extraordinary circumstance that significantly limited a student's capacity to withdraw in a timely manner or when the student was forced to leave the University abruptly due to a health or safety emergency within their immediate family, or to an individual whose close relationship with a student is the equivalent of a family relationship, Title IX, or some other type of extenuating circumstance.

To submit a request for a Fall or Spring retroactive term withdrawal, students must contact the Associate Dean of their college. The withdrawal date will be based upon the last confirmed assignment submission or other documented instance of participation in any course relevant to the request. The deadline for requesting a retroactive withdrawal for Fall or Spring term is six months after the final day of the term of which the student withdrew.

Retroactive Winter Session/Summer University Session Withdrawal

** Retroactive withdrawal is defined as a request for withdrawal from ALL courses for the session.*

A request for a retroactive withdrawal for a Winter Session or Summer University course(s) may be submitted to the Division of Lifelong Learning. Typically, this type of withdrawal is requested when extenuating circumstances significantly impaired the student's ability to complete the session and officially withdraw by the established session deadlines as outlined on the Division of Lifelong Learning's website, <https://dll.umaine.edu/>. Examples of extenuating circumstances may include, but are not limited to, those listed in the Retroactive Fall/Spring Term Withdrawal policy.

To submit a request for a retroactive withdrawal for a Winter Session or Summer University course or courses, students must contact the Division of Lifelong Learning. The deadline for requesting a retroactive withdrawal for Winter or Summer Session is six months after the final day of the term of which the student withdrew.

Registration for Classes

Immunization

Maine law prohibits students born after 1956 from registering for classes until they have submitted proof of immunization against measles, mumps, and rubella with the Office of Student Records. Students must also provide proof of Tetanus/Diphtheria (Td or DT) or tetanus, diphtheria and pertussis (Tdap) that has been administered within the past 10 years. Students can forward the supporting documentation to directly to the Shared Processing Center at edocs@maine.edu or by fax at (207)581-5451.

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 75% completion of the course 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 acknowledge and adhere to the federal definition of a credit hour with respect to courses offered face to face, in hybrid format, and online, as developed in 2010 and published in the Code of Federal Regulations (CFR), Title 34, Part 600.02:

[A] credit hour is an amount of work represented in intended learning outcomes and verified by evidence of student achievement that is an institutionally established equivalency that reasonably approximates not less than

(1) One hour of classroom or direct faculty instruction and a minimum of two hours of out of class student work each week for approximately fifteen weeks for one semester or trimester hour of credit [. . .] or the equivalent amount of work over a different amount of time; or

(2) At least an equivalent amount of work as required in paragraph (1) of this definition for other academic activities as established by the institution[,] including laboratory work, internships, practica, studio work, and other academic work leading to the awarding of credit hours.

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 more than three final examinations in one day or have two exams scheduled at the same time are asked to work with their instructors to reschedule one of the final exams. If students have difficulty reaching a reasonable compromise with their instructors, the Office of Student Records will provide further assistance.

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 = Excellent work.
- B = Good work.
- C = Satisfactory 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. The maximum allowed time for students to complete a course for which they receive an "I" grade is 160 days. 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:
- The course was taken no more than one academic year preceding graduation.
- The student has at least 120 credits of graded work.
- All college, department, and general education requirements have been satisfied.
- 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 minor, 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 last day to add courses as 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 Thesis (HON 499) have the option to receive a deferred grade (TH) while they are working on the Honors thesis. Students will not be allowed to graduate with a "TH" 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.

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 on the Office Of Student Records website: <https://studentrecords.umaine.edu/policies/grades-and-grading/>

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.

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. More information on the transferring of courses can be found under the Transfer Credit section of the catalog.

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 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 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. Review occurs at the end of the fall and spring semesters.

Academic Probation

The minimum acceptable cumulative grade point average (GPA) 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 academic probation following a fall or spring semester in which their cumulative GPA falls below 2.0. Students are also placed on probation following a fall or spring semester in which they earn a semester GPA less than 2.0, even if their cumulative GPA remains at or above a 2.0.

Students on academic probation who do not improve their cumulative GPA to a 2.0 in the subsequent semester may be continued on probation or suspended. Students on probation may also be placed on a contract that requires them to meet certain academic conditions defined by their college dean. The conditions in the academic contract must be met for the student to return to good standing, and to avoid suspension. Students on probation without an academic contract are restored to good standing after achieving a cumulative and semester GPA of 2.0 or higher.

Academic Suspension

Students will be subject to suspension following any fall or spring semester when any of the following conditions apply:

1. The student's earned semester GPA is 0.00.
2. The student has failed to fulfill the terms of an academic contract.
3. The student is already on probation and has earned a semester GPA of 1.0 or below.
4. The student is already on probation and has not met required cumulative GPA minima (at least 1.7 for students with 0-23 earned credits; at least 2.0 for students with 24 or more earned credits) unless the student's semester GPA is 2.0 or higher.

Suspension is noted on the student's official academic record.

Suspended students may seek readmission after one semester. (Semesters are fall and spring.) A suspended student must file an application for readmission. Students may request permission from their associate dean to take up to two courses per semester, and/or during the summer term, 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. Dismissal is noted on the student's official academic record.

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 these programs. Since this is a program dismissal and not a dismissal from the University, the student may have the opportunity to earn a degree 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. The decision of the committee is final.

Summer Session Courses for Suspended and Dismissed Students

Students who are notified of suspension or academic dismissal from the university while attending a summer session or winter term course will be allowed to complete that course for a 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/>.

Procedures for Transfer of Academic Credit

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 or to edocs@maine.edu. Veterans must submit a Joint Services transcript or Form DD295.

Current degree-seeking University of Maine students who have taken a course or courses at another institution should request to have that institution send an official transcript to the Office of Student Records, 5781 Wingate Hall, Orono, ME 04469 or at umrecord@maine.edu.

Current degree-seeking students who have taken courses at other UMS institutions will be identified and their courses will be automatically applied as transfer credit to their academic record at the University of Maine after grades have been posted. 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.

Transfer Credits:

Eligibility: 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 completed within the University of Maine System) or is not normally associated with a bachelor's degree. Credit will not be awarded for institutionally based exams which originate from other schools, or for courses which are defined as developmental, post-baccalaureate, graduate level or professional development. The Office of Student Records maintains a transfer equivalency database of courses which are offered at other institutions and are transferable to the University of Maine.

Pass-fail courses taken outside the University Maine System (UMS) must have "pass" defined as a C- or higher in order to transfer. Only general elective credit will be awarded for courses taken under a pass/fail grading basis.

Non-Degree (including Certificate) Students are not eligible to receive transfer credit.

Evaluation: After a student has been admitted into a degree program and official copies of their transcripts have been received, an official evaluation of transfer credit will be completed, and applicable credits will be posted to their academic record. This evaluation will be available in the Student Center as a Transfer Credit Report, which will show course equivalencies, and any general education requirements satisfied. Students should consult with their advisor and/or Dean's Office to determine how transfer credits may be used to satisfy degree requirements.

Students who do not agree with the evaluation of their courses may submit a course syllabus to the Office of Student Records for further review. The syllabus should be attached to a statement in writing indicating which course or courses they feel were evaluated inaccurately, as well as what specific course or requirement should be satisfied. The Office of Student Records will review the appeal with a representative from the appropriate department. Appeals should be sent to um.transfer@maine.edu.

Transfer of credit where the courses are not equal in the number of credits earned between the sending and receiving institutions:

- In cases where the incoming number of credits is less than the UMaine equivalent course, elective credit only will be awarded. Students seeking to appeal the elective credit awarded should refer to the transfer appeal process.
- In cases where the incoming number of credits is greater than the UMaine equivalent course, credit will be awarded for the direct equivalent course and any remaining credits will be awarded as elective credits.

Subject Specific Credit Limitations: Physical Education skills classes will be limited to a total of eight credit hours and will be annotated on the transcript with an equivalent KPE 100S. Participation in varsity athletics will not transfer. Emergency Medical

Technician courses will be limited to nine total transfer credit hours and will be annotated on the transcript with an equivalent KPE 100E. 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.

Grades and GPA: Grades earned in courses from other institutions, including any other University of Maine System institution, will appear on the student's transcript; however they will NOT be calculated into the student's GPA.

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. More information on the Repeat Policy can be under the Grades and Grading section of the catalog.

Domestic Study Away: Current 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/>

Residency Requirement: Refer to the Degree/Graduation Requirements section of the catalog.

General Education Courses: All students are 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 from an regionally accredited institution are exempt from the general education requirements except specific courses required by the major (i.e. writing in the major and capstone). 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, with the exception of writing intensive general education requirements. Students seeking the writing intensive general education requirement should contact the English Department for additional review.

Substitutions/Waivers: Exceptions to equivalencies (different equivalents, waivers of curricular requirements based on transfer credit, 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 accredited international institutions, both for international students and for domestic students participating in education abroad programs. Academic transcripts submitted to the Office of International Programs for evaluation must be certified original documents. Documents in a language other than English must be accompanied by a certified English translation. The Office of International Programs may request that a student completes an external credential evaluation through an accredited agency in order for UMaine to accept the transfer credits. UMaine awards credit to students who have earned the International Baccalaureate diploma, Cambridge Advanced and other international tests. Contact the Office of International Programs in 300 Stodder Hall, (207) 581-3437, international@maine.edu for information or visit https://umaine.edu/international/transfer_credit/

Credit for Prior Learning: - See Credit for Prior Learning section.

Time Limitations of Course Work: Courses over five years old will be subject to additional review to determine if there have been significant changes.

Credit for Prior Learning

Student Eligibility: Students matriculated into a degree program 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.

Award of Credit and Transcription:

- Credit for Prior Learning (CPL) will be awarded based on assessment of documented college-level learning, which demonstrates achievement (at a grade level of C- or better) of learning outcomes for a specific requirement, discipline area elective, or general elective in accordance with institutional policy.
- Students may earn CPL credit for any requirement at any point in their program, unless there is a unique program requirement restricting this.
- No student may receive credit twice for the same course.
- The credit will display as transfer credit on the transcript.
- Credits awarded through the CPL process do not carry quality points and are not calculated in the grade point average. When credit has been awarded through the CPL process, the students will be notified by a message in their MaineStreet Student Center.

The following are methods by which Credit for Prior Learning (CPL) may be awarded:

Standardized Exams: Students must request to have an official score report sent directly to the Office of Student Records. The number of credits students may earn through these exams varies.

- Advancement Placement Exam (AP): AP exams are accepted for credit as national examinations (for University policy regarding these exams, see the Admission section of this catalog).
- College Level Examination Program (CLEP) /DSST (Formerly DAN TES Subject Standardized Test) (15 credits limitation):
 - 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. An additional \$50 fee will be assessed by the English Department for evaluation of essays related to CLEP Analyzing and Interpreting Literature exams. No more than fifteen (15) credit hours may be earned through CLEP/DSST exams. For more information: www.umaine.edu/csp/clep/
 - DSST (formerly DAN TES Subject Standardized Tests) are credit-by-examination tests originated by the United States Department of Defense's Defense Activity for Non-Traditional Education Support (DAN TES) program. These exams are open to all learners and can be taken to earn college credit for knowledge acquired outside of a traditional classroom. Students should register online through the DSST exam website, choose a testing site, and specify the institution to receive the exam score(s). For more information: www.getcollegetcredit.com.
- International Baccalaureate (IB-Higher Level): University of Maine recognizes IB achievement by awarding credit to students who score 5 or above on exams taken at the Higher Level (exams taken at the Standard Level are not eligible for transfer credit). A matrix of IB exam course equivalencies is maintained on the transfer equivalency table. For more information: www.ibo.org.
- Seal of Biliteracy: The Seal of Biliteracy is an award that recognizes student achievement in language learning for students who are proficient in English and an additional language. The University of Maine awards credit for successful certification of additional language(s) when a student achieves the Seal of Biliteracy. There are a number of foreign language testing services which may be used to demonstrate proficiency, however, scores must align with the Intermediate-Mid Proficiency level of the ACTFL Proficiency Scale in order to receive Seal of Biliteracy certification. Students who are evaluated at the Advanced-Low or higher proficiency level on the ACTFL OPI or OPIc proficiency tests will receive an additional three credit hours of elective credit at the 300 level. For more information and to view current equivalencies: Seal of Biliteracy Credit Table

Credential Review (15 credits limitation): Students may be able to earn credit for some licenses, certificates and other credentials from organizations outside the University, if these credentials represent learning that is comparable to that encountered in the college classroom. Students who have earned credentials or certifications from work or life experience should contact their Dean's Office to request a CPL review. The submission of credential documentation does not guarantee the awarding of credit. Any type of Credential or External Training Review assessment will require valid proof of learning such as the license or certificate awarded, course materials, or other information.

Military Credit: Students should submit a copy of their Joint Services transcript to be evaluated. Credit for military work will be evaluated based on recommendations of the American Council on Education (ACE) and will correspond to subject areas offered at the University of Maine.

- **Credit for Military Coursework (15 credits limitation):** Only courses recommended at the upper or lower baccalaureate level will be evaluated 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. Students seeking an exception should contact their Dean's Office to make a request. The Dean's Office will work with the appropriate department(s) to determine if an exception should be granted; supporting documentation may be required for review.
- **Credit for Military Experience:** Prior Learning related to training and other experiences in the military will be considered for transfer in the same way as other prior experiential learning. This type of experiential learning may be evaluated via CLEP/DSST exams or an Academic Portfolio Assessment. Students who have relevant experiences which relate to their program of study should contact their Dean's Office for more information.

Challenge Exam/Credit by Competency: Select departments, including the Department of Modern Languages and Classics and the English Department, evaluate prior learning through competency assessment exams. Interested students should contact the appropriate department for more information about available exams and any applicable fees.

Academic Portfolio Assessment (15 credits limitation): Academic portfolios are demonstrations of college-level learning which students have developed through work, volunteer, or life experience. Depending on the degree plan, portfolios may be used to fulfill major, gen ed, or general elective credit requirements. A prior learning portfolio typically includes a written narrative presentation and supporting documentation, assembled and submitted for assessment of college-level learning equivalent to a specific course or content area elective learning outcomes. Credit will be awarded for learning which demonstrates both theory and practical application. Departments conduct portfolio reviews at their discretion and may assess a \$50 review fee which would be charged to the student's account through the Bursar's Office. Submitting a CPL portfolio does not guarantee that credit will be awarded. Students seeking a review should contact their Dean's Office.

Degree Requirements for Graduation

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 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 major, or who are absent from the university for two or more years, must meet the program requirements in effect at the time of the change or of their return to the university.

Students changing their major to one that leads to licensure should visit the UMS State Authorization & Licensure page to learn more about their specific program and the licensure requirements in other states and territories, in addition to the contact information needed to inquire further into the licensure requirements associated with this program.

Any student has the right to select graduation requirements from a later catalog than the one in effect at the time of initial matriculation. No student may select requirements from an earlier catalog.

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. The student elected Pass/Fail option is not allowed for courses used to fulfill program requirements for the major, for the minor, for the college, or for general education. This restriction applies only to courses put on Pass/Fail by the student and not to courses where the department offers the courses on a Pass/Fail grading basis.
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 25% of the credits required for the degree using coursework originating from the University of Maine* with at least 15 of those credits at the 300 level or higher.** 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.

*This requirement is 30 credits for a typical 120 credit degree program, but will be higher for all programs where the minimum number of credits required to graduate exceeds 120. Students should refer to the entry for their major in this Catalog, and consult with their advisor, to verify the correct value for their degree plan.

**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.

Note: Effective Fall 2023, courses completed at the University of Maine at Machias shall count towards residency and GPA.

Dual Degrees

Students may earn a second baccalaureate degree by completing at least 30 credits beyond the number required for the degree with the lesser number of credit hours, the UMaine General Education requirements, all requirements of each degree program, and all requirements of each college. Unique writing in the major and capstone courses are required for the second degree program, in addition to those completed for the first degree and General Education.

In cases where both programs involved in a dual degree allow the Honors Thesis course (HON 498/499) to fulfill the capstone requirement, or list a common course option in their catalog text, students may request to satisfy both capstone requirements by completing a single course. Such a request must be approved by both degree program coordinators.

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). 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. Students may apply any credits previously earned in excess of the minimum number required for the first degree.

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.

* The readmission requirement is waived in cases where a student both:

- 1) Declared the dual degree prior to graduating with only one degree, and
- 2) Enrolls in coursework for the second degree in the immediately following academic year semester (i.e. fall or spring)

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 unless your program of study requires the completion of the minor.

Minors are awarded at the same time a degree is conferred. Students who complete their baccalaureate but not their minor(s) requirements by graduation will not be allowed to return to the university to complete declared minors.

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.

Change of Major

University of Maine degree candidates planning to change majors should contact the academic program in which enrollment is sought. Students who have a 2.0 or better cumulative UMaine GPA are normally admitted to the program they are seeking to enter, but certain programs have special admission criteria.

Students who have less than a 2.0 cumulative UMaine GPA may be admitted to their program of choice contingent on previous course work and related factors, or be referred to either the Undergraduate Advising Center in the College of Liberal Arts and Sciences or to the Bachelor of University Studies (BUS) program in the Division of Lifelong Learning for information about alternative pathways to completing a UMaine degree.

Latin Honors

Degrees with Latin honors are conferred 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

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. Calculation of the University of Maine credits earned is based on credits earned as of the end of the fall semester prior to the spring semester valedictorian-salutatorian selection process.

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 the previous August, or previous 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 February 1, for degrees to be awarded in May

by July 15, for degrees to be awarded in August

by October 1, 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 August degree candidates and students completing degree requirements during Winter Term are considered May degree candidates.

Graduation Timeline

The Office of Student Records 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 Requirements

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 NECHE 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

A student (completing more than one academic major or baccalaureate degree) need complete only one set of UMaine General Education Requirements. For example, a student completing a double major need complete the "writing intensive course in the major" and the capstone experience only for the designated primary major. Exception: some departments may specifically require their writing intensive and capstone courses as part of the major, aside from their role in general education. In this case the double-major student must complete them, not because of general education policy, but because the major program requires them.

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 except specific courses required by the major (i.e. writing in the major and capstone). 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 courses from UMaine.

Note: The student elected Pass/Fail option is not allowed for courses used to fulfill program requirements for the major, for the minor, for the college, or for general education.

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 122 - 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 - General Chemistry I **Credits:** 3
- * CHY 122 - General Chemistry II **Credits:** 3
- * EES 140 - Soil Science **Credits:** 3
- ERS 103 - Dynamic Earth **Credits:** 3
- ERS 108 - Beaches and Coasts **Credits:** 3
- ERS 152 - Earth's Changing Climate **Credits:** 3
- ERS 107 - Energy, Environment, & Climate **Credits:** 3
- ERS 319 - Geohazards and Humans **Credits:** 3
- FSN 101 - Introduction to Food and Nutrition **Credits:** 3
- FSN 121 - Brewing with Food Science **Credits:** 3
- INT 125 - Experiential Program Innovation Central **Credits:** 3
- KPE 253 - Lifetime Fitness for Health **Credits:** 3
- PSE 105 - Principles of Sustainable Agriculture **Credits:** 3
- PSE 110 - Introduction to Horticulture **Credits:** 3
- * SFR 111 - Forest Through Time **Credits:** 1
- * SFR 112 - Forests Through Time: Discussions **Credits:** 2
- SFR 215 - Introduction to Sustainable Materials and Technology **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 211 - Introduction to Aquaculture **Credits:** 3
- SMS 374 - Deep Sea Biology **Credits:** 3
- * WLE 200 - Ecology **Credits:** 3

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
- BIO 100 - Basic Biology **Credits:** 4
- * BIO 122 - Biology: The Living Science **Credits:** 3
- * BIO 123 - Biology: The Living Science Laboratory **Credits:** 1
- BIO 200 - Biology of Organisms **Credits:** 4
- BIO 205 - Field Natural History of Maine **Credits:** 4
- BIO 208 - Anatomy and Physiology **Credits:** 4

- 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 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 104 - The Chemistry of Food and Cooking **Credits: 4**
- * CHY 121 - General Chemistry I **Credits: 3**
- * CHY 122 - General Chemistry II **Credits: 3**
- * CHY 123 - General Chemistry Laboratory I **Credits: 1**
- * CHY 124 - General Chemistry Laboratory II **Credits: 1**
- * EES 140 - Soil Science **Credits: 3**
- * EES 141 - Soil Science Laboratory **Credits: 1**
- ERS 101 - Introduction to Earth Science **Credits: 4**
- ERS 102 - Environmental Geology **Credits: 4**
- ERS 200 - Earth Systems **Credits: 4**
- ERS 201 - Global Environmental Change **Credits: 4**
- ERS 240 - The Atmosphere **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**
- SMS 374 - Deep Sea Biology **Credits: 3**
- * 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 Tradition

- ANT 221 - Introduction to Folklore **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 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 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**
- CMJ 201 - Rhetorical Theory **Credits: 3**
- CMJ 211 - Journalism and Media History **Credits: 3**
- CMJ 375 - Journalism and Media Law **Credits: 3**
- ECO 160 - Freakonomics **Credits: 3**
- ECO 240 - Maine Economy **Credits: 3**
- ECO 391 - Introduction to Growth and Development **Credits: 3**

- ENG 131 - The Nature of Story **Credits: 3**
- ENG 222 - Reading Poems **Credits: 3**
- ENG 235 - Literature and the Modern World **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 253 - Shakespeare: Selected Plays **Credits: 3**
- ENG 256 - British Women's Literature **Credits: 3**
- ENG 271 - The Act of Interpretation **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 170 - Transnational Beat, Jack Kerouac **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**
- HTY 103 - Creating America to 1877 **Credits: 3**
- HTY 104 - United States History Since 1877 **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 202 - Medieval Civilization **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 221 - History and Comics **Credits: 3**
- HTY 235 - Heresy, Witchcraft, and Reform **Credits: 3**
- HTY 278 - American Military History **Credits: 3**
- HTY 279 - European Military History **Credits: 3**
- HTY 312 - Furs, Frontiers, and Fame: North American Exploration **Credits: 3**
- HTY 330 - Robber Barons, Reformers and Radicals 1877-1914 **Credits: 3**
- HTY 232 - Womanhood in America **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: The Age of Reform **Credits: 3**
- HTY 407 - The Age of Monarchs and Revolution: Europe, 1648-1815 **Credits: 3**
- HTY 409 - European Society and Culture in the Age of Total War **Credits: 3**
- HTY 411 - The Holocaust **Credits: 3**
- HTY 420 - Science and Society Since 1800 **Credits: 3**
- HTY 427 - Vikings! **Credits: 3**
- HTY 450 - History of the British Empire **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 463 - The Early Republic, 1789-1840 **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 477 - The American Worker **Credits: 3**
- JST 200 - Introduction to Judaism **Credits: 3**
- MAT 345 - History of Mathematics **Credits: 3**
- MES 350 - Maine Women **Credits: 3**
- MLC 110 - From Cacao to Chocolate **Credits: 1**
- MLC 210 - Introduction to Modern Languages **Credits: 3**
- MSL 301 - Training Management and the Warfighting Functions **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 201 - Becoming a Philosopher **Credits: 3**
- PHI 210 - History of Ancient Philosophy **Credits: 3**
- PHI 212 - Hegel and 19th Century Philosophy **Credits: 3**
- PHI 222 - Philosophy of Games **Credits: 3**
- PHI 214 - 20th Century Continental Philosophy **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 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 - Minds and Machines **Credits: 3**
- PHI 360 - Metaphysics **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 301 - Classical 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**
- 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 415 - Feminism and Literature **Credits: 3**
- SPA 416 - Modernism(o) and Avant-Garde **Credits: 3**
- SPA 419 - Rebels & Realists in 19th-Century Literature **Credits: 3**
- SPA 495 - Senior Project in Spanish **Credits: 0-3**
- SVT 221 - Boundary Law **Credits: 3**
- THE 112 - 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 252 - Civilization in South Asia **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 400 - Basic Theory in Cultural Anthropology **Credits: 3**
- ANT 430 - Who Owns Native Cultures? **Credits: 3**
- ANT 464 - Ecological Anthropology **Credits: 3**
- ANT 466 - Economic Anthropology **Credits: 3**
- ARH 270 - Topical Survey in History of Art **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 Media Studies **Credits: 3**
- CMJ 102 - Fundamentals of Interpersonal Communication **Credits: 3**
- CMJ 103 - Public Speaking **Credits: 3**
- CMJ 107 - Communication and the Environment **Credits: 3**
- CMJ 111 - Introduction to Journalism **Credits: 3**
- CMJ 202 - Communication Theory **Credits: 3**

- CMJ 211 - Journalism and Media History **Credits: 3**
- CMJ 314 - International Media **Credits: 3**
- CMJ 375 - Journalism and Media Law **Credits: 3**
- CMJ 380 - Advertising, Media and Society **Credits: 3**
- CMJ 405 - Gender in Communication **Credits: 3**
- CMJ 420 - SL: Health Communication **Credits: 3**
- CRJ 114 - Survey of Criminal Justice **Credits: 3**
- CRJ 314 - Law and Society **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 160 - Freakonomics **Credits: 3**
- ECO 154 - Small Business Economics and Management **Credits: 3**
- ECO 285 - Economics of Sports **Credits: 3**
- ECO 221 - Intermediate Macroeconomics **Credits: 3**
- ECO 471 - Public Finance and Fiscal Policy **Credits: 3**
- ECO 377 - Environmental Economics and Policy **Credits: 3**
- ECO 404 - Behavioral Economics **Credits: 3**
- ECO 442 - Health Economics **Credits: 3**
- EET 484 - Engineering Economics **Credits: 3**
- ENG 320 - Technical Communication for Engineering **Credits: 3**
- ENG 280 - Introduction to Film **Credits: 3**
- FAS 101 - Introduction to the French cultures of North America **Credits: 3**
- FAS 140 - Searching for Family Origins: Genealogy, DNA, and Family Trees **Credits: 3**
- FAS 200 - SL: Primary Sources in Franco American Studies **Credits: 3**
- HON 170 - Currents and Context **Credits: 1**
- HON 175 - SL: Community Building and Engagement **Credits: 1**
- HTY 103 - Creating America to 1877 **Credits: 3**
- HTY 104 - United States History Since 1877 **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 **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 235 - Heresy, Witchcraft, and Reform **Credits: 3**
- HTY 240 - Creation of the Atlantic World, 1450-1888 **Credits: 3**
- HTY 241 - History of Globalization, 1900-Present **Credits: 3**
- HTY 261 - New England and Eastern Canada Since 1815: A Transnational Region **Credits: 3**
- HTY 278 - American Military History **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 463 - The Early Republic, 1789-1840 **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**
- INV 405 - Innovation Leadership **Credits: 4**
- INV 121 - Fundamentals of Innovation **Credits: 3**
- INV 180 - Create: Innovation Engineering I **Credits: 3**
- INV 392 - Commercialize: Innovation Engineering III **Credits: 3**
- LBR 200 - Information Literacy **Credits: 3**
- LDR 100 - Foundations of Leadership **Credits: 3**
- LDR 300 - Advanced Leadership Theory and Practice **Credits: 3**
- LDR 390 - Contemporary Leadership and the Art of Political Strategy **Credits: 3**
- LDR 495 - Washington D.C. Leadership Institute **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**
- MGT 220 - The Legal Environment of Business **Credits: 3**
- MGT 331 - Labor-Management Relations **Credits: 3**
- MSL 350 - The Evolution of American Warfare **Credits: 3**
- MSL 401 - The Army Officer **Credits: 4**
- MSL 402 - Company Grade Leadership **Credits: 4**
- MSL 410 - Cadet Troop Leader Training **Credits: 3**
- NAS 101 - Introduction to Native American Studies **Credits: 3**
- NAS 102 - Introduction to Wabanaki Culture, History and Contemporary Issues **Credits: 3**
- NAS 270 - Gender in Native American Cultures **Credits: 3**
- NAS 220 - North American Indian History **Credits: 3**
- NAV 202 - Sea Power and Maritime Affairs **Credits: 3**
- NAV 310 - Evolution of Warfare **Credits: 3**
- NMD 100 - Introduction to New Media **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**
- 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 - Minds and Machines **Credits: 3**
- PHI 432 - Environmental Justice **Credits: 3**
- POS 100 - American Government **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 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 376 - Politics of the Global Economy **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 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**
- PSY 100 - General Psychology **Credits: 3**
- PSY 230 - Social Psychology **Credits: 3**
- SFR 222 - Environmental Communication Skills **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 214 - Crime and Criminal Justice **Credits: 3**
- SOC 220 - Sociology of Deviance **Credits: 3**
- SOC 240 - Topics in Sociology **Credits: 1-3**
- SOC 310 - Food Systems and Social Change **Credits: 3**
- SOC 329 - Sociology of Gender **Credits: 3**
- SOC 337 - Sociology of Mental Illness **Credits: 3**
- SOC 325 - Sociology of Religion **Credits: 3**
- SOC 338 - Race and Ethnicity **Credits: 3**
- SPA 415 - Feminism and Literature **Credits: 3**
- SPA 420 - Spanish Film **Credits: 3**
- SVT 451 - Survey Business Law **Credits: 3**
- SWK 320 - Introduction to Social Work **Credits: 3**
- SWK 440 - Social Welfare Policy and Issues **Credits: 3**

- WGS 101 - Introduction to Women's, Gender, and Sexuality Studies **Credits: 3**
- WGS 103 - Introduction to Lesbian, Gay, Bisexual, Transgender, and Queer Studies **Credits: 3**
- WGS 203 - Men and Masculinities **Credits: 3**
- WGS 205 - Introduction to Feminist and Critical Data Analysis **Credits: 3**
- WGS 270 - Gender in Native American Cultures **Credits: 3**
- WGS 303 - Social Movements, Media and Change **Credits: 3**
- WGS 351 - Authorizing Women's Sexualities **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 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 247 - Animals across Cultures **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 270 - Environmental Justice Movements in the United States **Credits: 3**
- ANT 317 - Fundamentals of Archaeology **Credits: 3**
- ANT 330 - The U.S. Folk Experience **Credits: 3**
- ANT 400 - Basic Theory in Cultural Anthropology **Credits: 3**
- ANT 426 - Native American Folklore **Credits: 3**
- ANT 430 - Who Owns Native Cultures? **Credits: 3**
- ANT 451 - Native American Cultures and Identities **Credits: 3**
- ANT 477 - Field Research in Archaeology **Credits: 2-6**
- ARH 100 - Art and Human Experience **Credits: 3**
- ARH 155 - Art and Visual Culture in the Ancient and Medieval Worlds **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 369 - Film and Video Theory Seminar **Credits: 3**
- ARH 493 - Medieval Research Seminar **Credits: 3**
- ARH 494 - Renaissance Research Seminar **Credits: 3**
- CAN 101 - Introduction to Canadian Studies **Credits: 3**
- CHI 101 - Elementary Chinese I **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**

- CMJ 314 - International Media **Credits: 3**
- CMJ 401 - Speech, Space, Event: Critical Applications **Credits: 3**
- CMJ 405 - Gender in Communication **Credits: 3**
- CRJ 314 - Law and Society **Credits: 3**
- CSD 130 - Introduction to Communication Sciences and Disorders **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**
- ENG 131 - The Nature of Story **Credits: 3**
- ENG 236 - Intro to Canadian Literature **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 the French cultures of North America **Credits: 3**
- FAS 170 - Transnational Beat, Jack Kerouac **Credits: 3**
- FAS 200 - SL: Primary Sources in Franco American Studies **Credits: 3**
- FRE 101 - Elementary French I **Credits: 3 - 4**
- FRE 102 - Elementary French II **Credits: 3 - 4**
- FRE 201 - Intermediate French I **Credits: 3 - 4**
- FRE 202 - Intermediate French II **Credits: 3 - 4**
- FRE 305 - French Conversation and Composition: Social Issues **Credits: 3**
- FRE 306 - French Conversation and Composition: Global Issues **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 350 - Multidisciplinary Readings in French **Credits: 1**
- FRE 397 - French (May Term) **Credits: 3**
- FRE 400 - Advanced French Grammar **Credits: 3**
- FRE 401 - Translation and Comparative Stylistics **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 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 Culture **Credits: 3**
- GEO 100 - World Geography **Credits: 3**
- GEO 265 - The Power of Maps **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**
- GER 102 - Elementary German II **Credits: 3**
- GER 203 - Intermediate German I **Credits: 3**
- GER 204 - Intermediate German II **Credits: 3**
- HBR 101 - Beginning Modern Hebrew **Credits: 3**
- HBR 102 - Beginning Modern Hebrew II **Credits: 3**
- HTY 107 - East Asian Civilization **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 202 - Medieval Civilization **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 265 - The Power of Maps **Credits: 3**
- HTY 275 - Geography of Globalization **Credits: 3**
- HTY 281 - Military History of Modern Asia **Credits: 3**
- HTY 310 - Slavery, Politics, and Memory in American History **Credits: 3**
- HTY 312 - Furs, Frontiers, and Fame: North American Exploration **Credits: 3**
- HTY 232 - 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 403 - Early Middle Ages **Credits: 3**
- HTY 405 - Early Modern Europe: The Age of Reform **Credits: 3**
- HTY 411 - The Holocaust **Credits: 3**
- HTY 427 - Vikings! **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 460 - Modern Canada **Credits: 3**
- HTY 463 - The Early Republic, 1789-1840 **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 475 - History of Modern Warfare **Credits: 3**
- HTY 476 - History of Modern Terrorism **Credits: 3**
- HTY 477 - The American Worker **Credits: 3**
- HTY 480 - Global Environmental History **Credits: 3**
- INA 310 - Camden Conference Course **Credits: 3**
- INT 495 - Experiencing History, Culture, and Societal Differences Through Travel Study **Credits: 3**
- JST 205 - Jewish History and Antisemitism from Antiquity to the Founding of the State of Israel **Credits: 3**

- KPE 411 - Ethics and Social Justice in Outdoor Leadership **Credits: 3**
- MES 350 - Maine Women **Credits: 3**
- MGT 328 - Canadian/U.S. Business: A Comparison **Credits: 3**
- MLC 190 - Topics in Modern Languages **Credits: 1-3**
- MSL 302 - Training Applied Leadership in Small Unit Operations **Credits: 3**
- MSL 390 - Cultural Understanding and Language Proficiency **Credits: 3**
- MSL 402 - Company Grade Leadership **Credits: 4**
- MUH 150 - History of Jazz **Credits: 3**
- NAS 101 - Introduction to Native American Studies **Credits: 3**
- NAS 102 - Introduction to Wabanaki Culture, History and Contemporary Issues **Credits: 3**
- NAS 202 - Wabanaki Languages I **Credits: 3**
- NAS 203 - Wabanaki Language II **Credits: 3**
- NAS 220 - North American Indian History **Credits: 3**
- NAS 230 - Maine Indian History in the Twentieth Century **Credits: 3**
- NAS 270 - Gender in Native American Cultures **Credits: 3**
- NAS 401 - Advanced Topics in Native American Studies **Credits: 3**
- NAS 451 - Native American Cultures and Identities **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 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 491 - Forgiveness: Creating a Culture of Peace and Reconciliation **Credits: 3**
- PHI 221 - Classical Chinese Philosophy **Credits: 3**
- PHI 236 - Feminist Ethical, Social and Political Theory **Credits: 3**
- PHI 287 - Buddhist Philosophy **Credits: 3**
- PHI 317 - Existentialism and Phenomenology **Credits: 3**
- PHI 346 - The Philosophy of Mahatma Gandhi **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 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 - Terrorism **Credits: 3**
- POS 372 - Canadian Foreign Policy **Credits: 3**
- POS 374 - American Foreign Policy **Credits: 3**
- POS 376 - Politics of the Global Economy **Credits: 3**
- POS 467 - African Politics **Credits: 3**
- POS 475 - International Security **Credits: 3**
- SFR 226 - Park Systems of the World **Credits: 3**
- SOC 201 - Social Inequality **Credits: 3**
- SOC 308 - Problems of Violence and Terrorism **Credits: 3**
- SOC 329 - Sociology of Gender **Credits: 3**

- SOC 338 - Race and Ethnicity **Credits: 3**
- SPA 101 - Elementary Spanish I **Credits: 3**
- SPA 102 - Elementary Spanish II **Credits: 3**
- SPA 109 - Spanish for the Medical Professions **Credits: 3**
- SPA 117 - Accelerated Spanish I **Credits: 6**
- SPA 203 - Intermediate Spanish I **Credits: 3**
- SPA 204 - Intermediate Spanish II **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 311 - Latinos in the U.S. **Credits: 3**
- SPA 350 - Multi-disciplinary Readings in Spanish **Credits: 1**
- SPA 401 - Golden Age **Credits: 3**
- SPA 409 - Contemporary Latin-American Short Story **Credits: 3**
- SPA 410 - Latin American Novel **Credits: 3**
- SPA 414 - History of the Spanish Language **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 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 360 - Global Theatre History **Credits: 3**
- THE 460 - Topics in Global Theatre **Credits: 3**
- VOX 100 - Beginning Spoken Arabic I **Credits: 3**
- VOX 101 - Beginning Spoken Chinese 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 131 - Beginning Spoken Chinese 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 167 - Beginning Spoken Japanese III **Credits: 3**
- VOX 190 - Critical Languages (Other) **Credits: 3**
- VOX 207 - Intermediate Spoken Japanese I **Credits: 3**
- VOX 290 - Intermediate Critical Languages (Other) **Credits: 3**
- WGS 101 - Introduction to Women's, Gender, and Sexuality Studies **Credits: 3**
- WGS 103 - Introduction to Lesbian, Gay, Bisexual, Transgender, and Queer Studies **Credits: 3**

- WGS 203 - Men and Masculinities **Credits: 3**
- WGS 250 - Women and Music **Credits: 3**
- WGS 270 - Gender in Native American Cultures **Credits: 3**
- WGS 280 - Intersectionality and Social Movements **Credits: 3**
- WGS 303 - Social Movements, Media and Change **Credits: 3**
- WGS 340 - Transnational Feminisms **Credits: 3**
- WGS 360 - Gender and Cinema **Credits: 3**
- WGS 371 - Border-crossing: Gendered Perspectives on Modern Migration **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 410 - Human Dimensions of Climate Change **Credits: 3**
- ANT 431 - Folklore, the Environment and Public Policy **Credits: 3**
- ANT 464 - Ecological Anthropology **Credits: 3**
- AVS 254 - Introduction to Animal Microbiomes **Credits: 3**
- BIO 122 - Biology: The Living Science **Credits: 3**
- BIO 309 - Sustainability and Conservation Travel Study **Credits: 3**
- BIO 342 - Plants in Our World **Credits: 3**
- BIO 455 - Biological Invasions **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**
- CMJ 407 - SL -Environmental Communication **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 - Environmental Economics and Policy **Credits: 3**
- ECO 381 - SL: Sustainability Science, Policy, and Action **Credits: 3**
- ECO 405 - SL: Sustainable Energy Economics & Policy **Credits: 3**
- ECO 477 - Natural Resource Economics and Policy **Credits: 3**
- EES 100 - Human Population and the Global Environment **Credits: 3**
- EES 324 - Environmental Protection Law and Policy **Credits: 3**
- EES 351 - Energy, Wealth, and Power: a Biophysical Systems view of Nature and Society **Credits: 3**
- EET 460 - Renewable Energy and Electricity Production **Credits: 3**
- ERS 102 - Environmental Geology **Credits: 4**
- ERS 103 - Dynamic Earth **Credits: 3**
- ERS 108 - Beaches and Coasts **Credits: 3**
- ERS 121 - Humans and Global Change **Credits: 3**
- ERS 201 - Global Environmental Change **Credits: 4**

- ERS 319 - Geohazards and Humans **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 Culture **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 261 - New England and Eastern Canada Since 1815: A Transnational Region **Credits: 3**
- HTY 275 - Geography of Globalization **Credits: 3**
- HTY 365 - The American Immigrant Experience **Credits: 3**
- HTY 404 - Late Middle Ages **Credits: 3**
- HTY 465 - American Landscapes **Credits: 3**
- HTY 480 - Global Environmental History **Credits: 3**
- ECO 105 - Environmental Policy **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 132 - Life, Technology and Evolution **Credits: 3**
- PHI 232 - Environmental Ethics **Credits: 3**
- PHI 332 - Environmental Philosophy **Credits: 3**
- PHI 432 - Environmental Justice **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 215 - Introduction to Sustainable Materials and Technology **Credits: 3**
- 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 374 - Deep Sea Biology **Credits: 3**
- SOC 315 - Environmental Sociology **Credits: 3**
- WGS 230 - Women, Health, and the Environment **Credits: 3**
- WGS 371 - Border-crossing: Gendered Perspectives on Modern Migration **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 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 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 180 - Photography I **Credits: 3**
- ART 182 - Photography and Digital Imaging **Credits: 3**
- ART 225 - Ceramics I **Credits: 3**
- ART 270 - Digital Art I **Credits: 3**
- ART 370 - Digital Art II **Credits: 3**
- CMJ 106 - Storytelling **Credits: 3**
- CMJ 261 - Photographic Reporting and Storytelling **Credits: 3**
- CMJ 351 - Audio and Video Production **Credits: 4**
- CMJ 434 - Editorial and Opinion Writing **Credits: 3**
- CMJ 466 - SL: Narrative, Performance, and Social Change **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**
- EET 115 - Creative Design Using CAD **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 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 249 - American Sports Literature and Film **Credits: 3**
- ENG 253 - Shakespeare: Selected Plays **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**
- GEO 265 - The Power of Maps **Credits: 3**
- HON 180 - A Cultural Odyssey **Credits: 1**
- HON 309 - The Honors Read Tutorial **Credits: 3**
- HTY 221 - History and Comics **Credits: 3**
- HTY 265 - The Power of Maps **Credits: 3**
- INV 121 - Fundamentals of Innovation **Credits: 3**
- KPE 266 - Teaching Dance and Creative Movement **Credits: 3**
- MUH 150 - History of Jazz **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**
- 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**
- NMD 104 - New Media Design **Credits: 3**
- NMD 250 - Electronic Music Composition I: Item and Arrangement **Credits: 3**
- NMD 341 - Documentary Photography and Storytelling **Credits: 3**
- NMD 343 - SL: Digital Narrative Workshop I **Credits: 3**
- NMD 370 - 3D Modeling and Animation **Credits: 3**
- NUR 150 - Scholarship of Wellness & Mindfulness **Credits: 1**
- NUR 214 - Mindfulness-Based Stress Reduction **Credits: 2**
- PAX 250 - Peace and Pop Culture **Credits: 3**
- PHI 104 - Existentialism and Literature **Credits: 3**
- PHI 222 - Philosophy of Games **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 416 - Modernism(o) and Avant-Garde **Credits: 3**
- SPA 420 - Spanish Film **Credits: 3**
- THE 111 - Introduction to Theatre **Credits: 3**
- THE 117 - Fundamentals of Acting **Credits: 3**
- THE 200 - Fundamentals of Design **Credits: 3**
- THE 216 - Fundamentals of Directing **Credits: 3**
- THE 415 - Capstone Experience in Theatre **Credits: 3**
- WGS 206 - Investigating Equity **Credits: 3**
- WGS 250 - Women and Music **Credits: 3**
- WGS 260 - Gardening as Social Justice **Credits: 3**
- WGS 360 - Gender 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.

- AVS 454 - DNA Sequencing Analysis Lab **Credits: 2**
- CMJ 402 - Communication Research **Credits: 3**
- COS 120 - Introduction to Programming I **Credits: 3**
- COS 121 - Coding for Everyone **Credits: 3**
- COS 125 - Introduction to Problem Solving Using Computer Programming **Credits: 4**
- COS 220 - Introduction to C++ Programming **Credits: 3**
- ECO 405 - SL: Sustainable Energy Economics & Policy **Credits: 3**
- ECO 385 - Econometrics **Credits: 3**
- ERS 152 - Earth's Changing Climate **Credits: 3**
- ERS 107 - Energy, Environment, & Climate **Credits: 3**
- ERS 323 - Extreme Weather **Credits: 3**
- INV 282 - Advanced Innovation Skills **Credits: 4**
- INV 392 - Commercialize: Innovation Engineering III **Credits: 3**
- KPE 304 - Assessment Technology and Data Management for Physical & Health Education and Exercise Prescription **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 115 - Applied Mathematics for Business and Economics **Credits: 3**
- MAT 116 - Introduction to Calculus **Credits: 3**

- MAT 117 - Applications of Calculus **Credits: 3**
- MAT 122 - Pre-Calculus **Credits: 4**
- MAT 126 - Calculus I **Credits: 4**
- MAT 127 - Calculus II **Credits: 4**
- MAT 136 - Honors Level Calculus I **Credits: 4**
- MAT 137 - Honors Level Calculus II **Credits: 4**
- NMD 105 - Creative Coding I **Credits: 3**
- NUR 150 - Scholarship of Wellness & Mindfulness **Credits: 1**
- NUR 203 - Dosage Calculation for Nurses **Credits: 1**
- PHI 250 - Formal Logic **Credits: 3**
- PSY 241 - Statistics in Psychology **Credits: 4**
- SFR 205 - Forest Measurements and Statistics **Credits: 3**
- SOC 219 - Statistical Reasoning in Sociology **Credits: 3**
- STS 215 - Introduction to Statistics for Business and Economics **Credits: 3**
- STS 132 - Principles of Statistical Inference **Credits: 3**
- WGS 205 - Introduction to Feminist and Critical Data Analysis **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.

- ACC 302 - Intermediate Accounting II **Credits: 3**
- AED 372 - Foundations of Art Education **Credits: 3**
- ANT 400 - Basic Theory in Cultural Anthropology **Credits: 3**
- ANT 448 - Ethnography Through Film **Credits: 3**
- ANT 460 - Research Design & Methods **Credits: 3**
- ANT 464 - Ecological Anthropology **Credits: 3**
- ANT 466 - Economic Anthropology **Credits: 3**
- ANT 476 - The Ancient Maya **Credits: 3**
- ANT 493 - Anthropology Senior Seminar & Capstone Research Project **Credits: 3**
- ARH 460 - Topics in Art History **Credits: 3**
- ARH 369 - Film and Video Theory 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**
- ART 499 - Studio Art Senior Capstone **Credits: 3**
- * AVS 401 - Capstone in Animal Science I **Credits: 2**
- * AVS 402 - Capstone in Animal Science II **Credits: 2**
- BEN 361 - Biomedical Engineering Laboratory I **Credits: 3**
- BEN 363 - Biomedical Engineering Laboratory II **Credits: 3**
- * BIO 388 - Research Capstone in Biology **Credits: 1-3**
- * 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**
- BMB 426 - Clinical Microscopy and Special Topics **Credits: 4**
- BIO 431 - Emerging Infectious Diseases **Credits: 4**
- BIO 438 - Morphogenesis in Development and Disease **Credits: 3**
- BIO 450 - Histology **Credits: 4**
- BIO 463 - River Ecology **Credits: 4**

- * BIO 480 - Cell Biology **Credits: 3**
And
- * BIO 483 - Cell Biology Laboratory **Credits: 2**

- BIS 468 - Information Systems Strategy and Security Management **Credits: 3**
- BMB 150 - Phage Genome Discovery I **Credits: 4**
- BMB 460 - Advanced Biochemistry **Credits: 3**
- CET 356 - Construction Project Administration **Credits: 3**
- CHE 361 - Chemical Engineering Laboratory I **Credits: 3**
- CHE 363 - Chemical Engineering Laboratory II **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**
- CHY 393 - Undergraduate Seminar in Chemistry **Credits: 3**
- CHY 491 - Advanced Integrated Laboratory I **Credits: 3**
- CIE 412 - Engineering Decisions **Credits: 3**
- CLA 101 - Greek Literature in English Translation **Credits: 3**
- CLA 102 - Latin Literature in English Translation **Credits: 3**
- CMJ 136 - Journalism Writing and Editing **Credits: 3**
- CMJ 332 - Public Affairs Reporting and Research **Credits: 3**
- CMJ 347 - Argument and Critical Thinking **Credits: 3**
- CMJ 401 - Speech, Space, Event: Critical Applications **Credits: 3**
- CMJ 466 - SL: Narrative, Performance, and Social Change **Credits: 3**
- CMJ 483 - Capstone Seminar in Media Studies **Credits: 3**
- CMJ 485 - Capstone Seminar in Communication **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 - Electric Circuits II **Credits: 4**

- ECE 342 - Electronics I **Credits: 4**
- ECE 403 - Electrical and Computer Engineering Design Project **Credits: 2**
- * ECO 470 - Independent Capstone **Credits: 3**
- ECO 489 - Senior Capstone **Credits: 3**
- EES 489 - Critical Issues in Ecology and Environmental Sciences **Credits: 4**
- EET 100 - Introduction to Electrical Engineering Technology **Credits: 4**
- EET 452 - Senior Design Project III **Credits: 1**
- EHD 101 - The Art and Science of Teaching **Credits: 3**
- ENG 129 - Topics in English **Credits: 3**
- ENG 201 - Strategies for Writing Across Contexts **Credits: 3**
- EHD 202 - Education in a Multicultural Society **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 271 - The Act of Interpretation **Credits: 3**
- ENG 301 - Seminar in Writing Studies **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 320 - Technical Communication for Engineering **Credits: 3**
- ENG 336 - Canadian Literature **Credits: 3**
- ENG 395 - Writing Center 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 - Genre Seminar **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**
- FIN 351 - Valuation and Corporate Investment Decisions **Credits: 3**
- FRE 305 - French Conversation and Composition: Social Issues **Credits: 3**
- FRE 306 - French Conversation and Composition: Global Issues **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**
- HON 150 - Phage Genome Discovery I **Credits: 4**
- HON 211 - Civilizations: Past, Present and Future III **Credits: 4**
- HON 212 - Civilizations: Past, Present and Future IV **Credits: 4**
- HON 499 - Honors Thesis/Research II **Credits: 3**
- * HTI 499 - Capstone in Interdisciplinary Studies in Multimodal Interaction **Credits: 3-6**
- HTY 311 - Research Seminar **Credits: 3**
- HTY 365 - The American Immigrant Experience **Credits: 3**
- HTY 405 - Early Modern Europe: The Age of Reform **Credits: 3**
- HTY 461 - Colonial British America to 1763 **Credits: 3**
- HTY 498 - Senior Seminar in History **Credits: 3**
- INV 282 - Advanced Innovation Skills **Credits: 4**
- KPE 271 - Professional Dispositions and Research in Physical and Health 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**
- LDR 395 - Bipartisan Leadership: Lessons for William S. Cohen's Career in Public Service **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**
- MGT 330 - Human Resource Management **Credits: 3**
- SPT 250 - Introduction to Sport Management **Credits: 3**
- MKT 480 - Managerial Marketing **Credits: 3**
- MSL 401 - The Army Officer **Credits: 4**
- MUH 201 - History of Western Music I **Credits: 2**
- NMD 200 - Designing Humane Tech **Credits: 3**
- NMD 498 - New Media Capstone I **Credits: 3**
- NUR 310 - Evidence Based Practice in Healthcare **Credits: 3**
- PAX 250 - Peace and Pop Culture **Credits: 3**
- PAX 260 - Realistic Pacifism **Credits: 3**
- PHI 201 - Becoming a Philosopher **Credits: 3**
- PHI 344 - Theories of Justice **Credits: 3**
- PHI 346 - The Philosophy of Mahatma Gandhi **Credits: 3**
- PHI 432 - Environmental Justice **Credits: 3**
- PHI 475 - Junior/Senior Philosophy Seminar **Credits: 3**
- PHY 364 - Modern Experimental Physics **Credits: 2**
- PHY 365 - Mechanics Laboratory **Credits: 2**
- POS 301 - Classical 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 308 - Liberalism and its Critics **Credits: 3**

- POS 385 - Women and Politics **Credits: 3**
- POS 453 - Political Behavior and Participation **Credits: 3**
- POS 467 - African Politics **Credits: 3**
- POS 487 - SL: Practicum in Engaged Policy Studies I **Credits: 3**
- POS 488 - SL: Practicum in Engaged Policy Studies II **Credits: 3**
- POS 499 - Senior Seminar in Political Science **Credits: 3**
- PSE 360 - Agroecology and Sustainable Cropping Systems **Credits: 4**
- PSE 424 - Nursery Management **Credits: 3**
- PSE 425 - Landscape Management **Credits: 3**
- PSY 491 - Senior Seminar in Psychology **Credits: 3**
- * PSY 494 - Senior Research Project **Credits: 1-3**
- SFR 490 - Small Woodlot Management **Credits: 3-4**
- SFR 491 - Senior Capstone in Parks, Recreation and Tourism **Credits: 3**
- * SFR 492 - Capstone Directed Study **Credits: 1-4**
- SFR 493 - Sustainable Tourism Planning **Credits: 3**
- * SFR 498 - Senior Research I **Credits: 2**
- * SFR 499 - Senior Research II **Credits: 2**
- SMS 352 - Semester-by-the-Sea: Marine Ecology **Credits: 4**
- * SMS 400 - Capstone Research Experience in Marine Science **Credits: 1-4**
- * SMS 404 - Capstone Seminar in Marine Science **Credits: 1**
- SOC 290 - Research Methods in Sociology **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 414 - History of the Spanish Language **Credits: 3**
- SPA 444 - Theory and Techniques of Translation **Credits: 3**
- SVT 221 - Boundary Law **Credits: 3**
- SVT 451 - Survey Business 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 360 - Global Theatre History **Credits: 3**
- THE 460 - Topics in Global Theatre **Credits: 3**
- UST 300 - Core Course in University Studies **Credits: 3**
- WGS 410 - Feminist, Gender and Queer Theory **Credits: 3**
- WLE 201 - Ecology Laboratory **Credits: 3**
- WLE 455 - Wildlife-Habitat Evaluation **Credits: 2**
- WLE 457 - Ecology and Management of Game Birds **Credits: 3**

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 247 - Animals across Cultures **Credits: 3**
- ANT 249 - Religion and Violence **Credits: 3**
- * BEN 477 - Elements of Biomedical Engineering Design **Credits: 3**
- * BEN 479 - Biomedical Engineering Design II **Credits: 3**
- * BEN 493 - Biomedical Engineering Seminar **Credits: 0-1**
- * CHE 477 - Elements of Chemical Engineering Design **Credits: 3**
- * CHE 479 - Chemical Engineering Design Projects **Credits: 3**
- * CHE 493 - Chemical Engineering 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 412 - Engineering Decisions **Credits: 3**
- 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**
- ECO 112 - Economics of Social Issues and Ethical Dilemmas **Credits: 3**
- ECO 433 - Labor Economics **Credits: 3**
- ECO 381 - SL: Sustainability Science, Policy, and Action **Credits: 3**
- ENG 235 - Literature and the Modern World **Credits: 3**
- EET 484 - Engineering Economics **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 140 - Searching for Family Origins: Genealogy, DNA, and Family Trees **Credits: 3**
- FSN 436 - Food Laws and Regulations **Credits: 3**
- HON 308 - Visiting Scholar in Ethics Tutorial **Credits: 3**
- HTY 310 - Slavery, Politics, and Memory in American History **Credits: 3**
- HTY 460 - Modern Canada **Credits: 3**

- INT 125 - Experiential Program Innovation Central **Credits: 3**
- JST 205 - Jewish History and Antisemitism from Antiquity to the Founding of the State of Israel **Credits: 3**
- KPE 411 - Ethics and Social Justice in Outdoor Leadership **Credits: 3**
- LDR 200 - Leadership Ethics **Credits: 3**
- LDR 380 - SL: Leadership and Service **Credits: 3**
- * MGT 220 - The Legal Environment of Business **Credits: 3**
- * MGT 449 - Strategic Management **Credits: 3**
- MSL 302 - Training Applied Leadership in Small Unit Operations **Credits: 3**
- MSL 401 - The Army Officer **Credits: 4**
- MUE 210 - Introduction to Music Education **Credits: 3**
- NAV 304 - Leadership and Ethics **Credits: 3**
- NUR 455 - Senior Clinical Practicum **Credits: 5**
- 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 221 - Classical Chinese Philosophy **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 242 - Ethics in Professional Life **Credits: 3**
- PHI 244 - Philosophy of Law **Credits: 3**
- PHI 287 - Buddhist Philosophy **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 Justice **Credits: 3**
- POS 201 - Introduction to Political Theory **Credits: 3**
- POS 282 - Introduction to American Law **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 308 - Liberalism and its Critics **Credits: 3**
- POS 353 - The U.S. Congress **Credits: 3**
- POS 370 - Terrorism **Credits: 3**
- POS 384 - American Civil Liberties **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**
- SFR 446 - Forest Resources Policy **Credits: 3**
- SOC 308 - Problems of Violence and Terrorism **Credits: 3**
- SOC 310 - Food Systems and Social Change **Credits: 3**
- SOC 337 - Sociology of Mental Illness **Credits: 3**
- WGS 101 - Introduction to Women's, Gender, and Sexuality Studies **Credits: 3**
- WGS 206 - Investigating Equity **Credits: 3**
- WGS 230 - Women, Health, and the Environment **Credits: 3**
- WGS 410 - Feminist, Gender and Queer Theory **Credits: 3**

Capstone Experience (3 Credits Minimum)

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.

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2019 Sandra L. Caron	1985 John A. Alexander
2018 Francis A. Drummond	1984 John W. Toole
2017 John F. Mahon	1983 Martin R. Stokes
2016 Paul B. Roscoe	1982 Eugene A. Mawhinney
2015 William Davids	1981 Mary S. Tyler
2014 Mary Jane Perry	1980 Malda Brandt-Newman
2013 Robert Lad	1979 Michael H. Lewis
2012 Joseph M. Genco	1978 Charles W. Smith
2011 Alfred A. Bushway	1977 Melvin Gershman
2010 Paul A. Mayewski	1976 Donald A. Grant
2009 James M. Acheson	1975 Erling R. Skorpen
2008 Janice V. Kristo & John F. Vetelino	1974 William G. Valleau
2007 Ivan J. Fernandez	1973 John H. Dearborn
2006 David W. Townsend	1972 Constance H. Carlson
2005 Robert A. Strong	1971 Douglas A. Gelinis
2004 Eric N. Landis	1970 Joseph Scimecca
2003 Kevin J. Boyle	1969 Robert B. Thomson
2002 James W. Warhola	1968 Jonathan Biscoe
2001 Keith W. Hutchison	1967 David W. Trafford
2000 Douglas M. Allen	1966 Richard G. Emerick
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1996 Malcolm L. Hunter, Jr.	
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1994 Dana N. Humphrey	
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2021 James Dill	1994 Ray B. Owen
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2021 Elizabeth Allan
2020 Robert Steneck
2019 Jasmine Saros
2018 Yong Chen
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2014 M. Kate Beard-Tisdale
2013 Francis Drummond
2012 Hemant P. Pendse
2011 John F. Mahon
2010 Paul B. Roscoe
2009 Owen F. Smith
2008 Mary Ellen Camire
2007 Elizabeth DePoy
2006 Kyriacos C. Markides
2005 James M. Acheson
2004 Robert J. Lad
2003 Habib J. Dagher
2002 Max J. Egenhofer
2001 Kevin Boyle
2000 Janice V. Kristo,
Rosemary A. Bamford
1999 Charles T. Hess
1998 Douglas M. Allen
1997 Gary M. King
1996 Burton N. Hatlen
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1993 William N. Unertl
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1987 John H. Dearborn
1986 Colin E. Martindale
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1984 Harold W. Borns,
David C. Smith
1983 No Award
1982 Bruce L. Nicholson
1981 Carroll F. Terrell
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1978 Peter Csavinszky
1977 William Pease, Jane Pease
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2023 Gregory Porter

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Inquiries should be directed as indicated below.

Chancellor:

Dannel P. Malloy, 15 Estabrooke Drive, Orono, ME 04401 (207) 973-3205.

Officers of the University of Maine

President: Joan Ferrini-Mundy, 5703 Alumni Hall, Room 200, Orono, ME 04469-5703, (207) 581-1512.

E-MAIL: umpresident@maine.edu

Executive Vice President for Academic Affairs and Provost: John C. Volin, 5703 Alumni Hall, Room 201, Orono, ME 04469-5703, (207) 581-1547.

E-MAIL: john.volin@maine.edu

Associate Provost for Academic Affairs and Faculty Development: Gabriel Paquette, 5703 Alumni Hall, Room 201, Orono, ME 04469-5703, (207) 581-1591.

E-MAIL: gabriel.paquette@maine.edu

Associate Provost for Student Success and Strategic Innovation: T. Scott Marzilli, 5703 Alumni Hall, Room 201, Orono, ME 04469-5703, (207) 581-1595.

E-MAIL: scott.marzilli@maine.edu

Associate Provost for Online and Continuing Education and Dean of Cooperative Extension: Hannah Carter, 5703 Alumni Hall, Suite 201, Orono, ME 04469-5703, (207) 581-2811

E-Mail: hcarter@maine.edu

Vice President for Research and Dean of Graduate School: Khodadad Varahramyan, 5703 Alumni Hall, Room 229, Orono, ME 04469-5703, (207) 581-1506.

E-MAIL: kody.varahramyan@maine.edu

Vice President for Strategic Partnerships, Innovation, Resources and Engagement: Jake Ward, 5717 Corbett Hall, Room 430, Orono, ME 04469-5717, (207) 581-2201.

E-MAIL: jsward@maine.edu

Vice President for Enrollment Management: Kevin Coughlin, 201 Heritage House, Orono, ME, 04469, (207) 581-1583.
E-MAIL: kevin.coughlin@maine.edu

Vice President of Student Life and Inclusive Excellence and Dean of Students: Robert Q. Dana, 5748 Memorial Union, Room 315, Orono, ME 04469, (207) 581-1406.
E-MAIL: rdana@maine.edu

Vice President for Finance and Chief Business Officer: Kelly Sparks, 5703 Alumni Hall, Room 118, Orono, ME 04469-5703, (207) 581-1593.
E-MAIL:kelly.sparks@maine.edu

Chief of Staff: Diane Dunn, 5703 Alumni Hall, Room 200, Orono, ME 04469-5703, (207) 581-1554.
E-MAIL: diane.dunn@maine.edu

Chief Marketing and Communications Officer: Meredith Whitfield, 5703 Alumni Hall, Room 213, Orono, ME 04469-5703, (207) 581-2749.
E-MAIL: meredith.whitfield@maine.edu

Director of Athletics: Jude Killy, 303 Memorial Gym, Orono, ME 04469, (207)581-1052.

E-MAIL: jude.killy@maine.edu

Maine Business School: Jason Harkins, Executive Dean, 5723 Donald P. Corbett Business Building, Room 211, Orono, ME 04469-5723, (207) 581-1968.
E-MAIL: jason.harkins@maine.edu

Graduate School of Business: Norman O'Reilly, Dean, 300 Fore Street, Portland, ME 04101, (207) 780-4404
E-MAIL: norman.oreilly@maine.edu

College of Education and Human Development: Penny Bishop, Dean, 5766 Shibles Hall, Room 151, Orono, ME 04469-5766, (207) 581-2412.
E-MAIL: penny.bishop@maine.edu

College of Liberal Arts and Sciences: Emily Haddad, Dean, 5754 Stevens, Room 105, Orono, ME 04469-5754, (207) 581-1954.
E-MAIL: emily.haddad@maine.edu

College of College of Earth, Life and Health Sciences: Diane Rowland, Dean, 5782 Winslow Hall, Room 105, Orono, ME 04469-5782, (207) 581-3202.
E-MAIL: diane.rowland@maine.edu

Maine College of Engineering and Computing: Giovanna Guidoboni, Dean, 5796 Advanced Manufacturing Center, Room 210, Orono, ME 04469-5796, (207) 581-2213

E-MAIL: giovanna.guidoboni@maine.edu

Division of Lifelong Learning: Hannah Carter, Associate Provost, 5703 Alumni Hall, Room 201, Orono, ME 04469-5703, (207) 581-1547.
E-MAIL: hannah.carter@maine.edu

Honors College: Ellen Weinauer, Dean, 5727 Colvin Hall, Room 100, Orono, ME 04469, (207) 581-3262.
E-MAIL: ellen.weinauer@maine.edu

Academic Support Services for Student Athletes: Margaret A. Maxim, Director, 5747 Memorial Gymnasium, Room 277,Orono, ME 04469-5747, (207) 581-1833.
E-MAIL: maxim@maine.edu

Admissions and Recruitment (Undergraduate): Christopher Richards, Director of Undergraduate Enrollment Management, Heritage House, Room 201, Orono, ME 04469, (207) 581-1583.
E-MAIL: UM_ADMIT@maine.edu

Advanced Structures and Composites Center: Habib J. Dagher, Director, 5793 Advanced Structures and Composites Center, Orono, ME 04469-5793, (207) 581-2123.
E-MAIL: hd@maine.edu

Alumni Association: Thomas Peaco, President/Executive Director, 1 Alumni Place, Buchanan Alumni House, Orono, ME 04469, (207) 581-1138.
E-MAIL: thomas.peaco@maine.edu

Auxiliary Services: Richard Young, Executive Director, 5734 Hilltop, Room 103, Orono, ME 04469-5734, (207) 356-2518.
E-MAIL: ryoung@maine.edu

Bureau of Labor Education: Marc T. Cryer, Director, 5713 Chadbourne Hall, Room 210, Orono, ME 04469-5713, (207) 581-4124.
E-MAIL: marc.cryer@maine.edu

Business Office: VACANT, Director, 5781 Wingate Hall, Orono, ME 04469-5781, (207) 581-1521.

E-MAIL:

Canadian-American Center: Frédéric Rondeau, Director, 154 College Avenue, Orono, ME 04469, (207) 581-4220.
E-MAIL: frederick.rondeau@maine.edu

Career Center: Chrisanne Blackie, Director, 5748 Memorial Union, Room 300, Orono, ME 04469-5713, (207) 581-2587.
E-MAIL: cblackie@maine.edu

Center for Aging: Lenard W. Kaye, Director, Camden Hall, 25 Texas Avenue, Bangor, ME 04401 (207) 262-7920.
E-MAIL: len.kaye@maine.edu

Center for Community Inclusion and Disability Studies: Alan Cobo-Lewis, Director, 5717 Corbett Hall, Room 230, Orono, ME 04469-5717, (207) 581-1084.
E-MAIL: alanc@maine.edu

Center for Innovation in Teaching and Learning: Peter Schilling, Executive Director, 5728 Fernald Hall, Room 102C, Orono, ME 04469-5728, (207) 581-3512.

E-MAIL: peter.schilling@maine.edu

Climate Change Institute: Paul A. Mayewski, Director, 5790 Bryand Global Science Center, Room 303, Orono, ME 04469-5790, (207) 581-2190.
E-MAIL: paul.mayewski@maine.edu

College Success Programs: Eric Chapman, Director, 5725 East Annex, Room 127, Orono, ME 04469-5725, (207) 581-2318.
E-MAIL: echapman@maine.edu

Communications: VACANT, Director, 5703 Alumni Hall, Room 213, Orono, ME 04469-5703, (207) 581-3743.
E-MAIL:

Cooperative Extension: Hannah Carter, Dean, 5741 Libby Hall, Room 104B, Orono, ME 04469-5741, (207) 581-2811.

E-MAIL: hcarter@maine.edu

Counseling Center: Angela Fileccia, Director, 5721 Cutler Health Center, Room 125, Orono, ME 04469-5721, (207) 581-1392.
E-MAIL: angela.fileccia@maine.edu

Events and Hospitality: Will Biberstein, Director, 5713 Chadbourne Hall, Room 327, Orono, ME 04469-5713, (207) 581-4091.
E-MAIL: williamb@maine.edu

Equal Opportunity: Amie Parker, Director, 5754 Boudreau Hall, Room 101, Orono, ME 04469-5754, (207) 581-1226.
E-MAIL: equal.opportunity@maine.edu

Explorations: John Mascetta, Director of Advising and Student Services, 5774 Stevens Hall, Room 105, Orono, ME 04469-5774, (207) 581-1957.
E-MAIL: john.mascetta@maine.edu

Fogler Library: Daisy Singh, Dean of Libraries, Fogler Library, Orono, ME 04469, (207) 581-1655.
E-MAIL: daisy.singh@maine.edu

Franco American Centre: Susan A. Pinette, Director, 5719 Crossland Center, Orono, ME 04469, (207) 581-3790.
E-MAIL: spinette@maine.edu

Franco American Studies: Susan A. Pinette, Director, 5742 Williams Hall, Room 213, Orono, ME 04469, (207) 581-3791.
E-MAIL: spinette@maine.edu

Graduate School: Scott Delcourt, Associate Vice President for Graduate Studies and Senior Associate Dean, 5775 Stodder Hall, Room 42, Orono, ME 04469-5775, (207) 581-3217.
E-MAIL: delcourt@maine.edu

Human Resources: Nicole Lawrence, Interim Vice President of Human Resources, 5717 Corbett Hall, Orono, ME 04469-5717, (207) 581-2978.

E-MAIL: nicole.lawrence@maine.edu

Information Technologies: Thomas Drake, Director of Campus Technology, 5766 Shibles Hall, Room 28, Orono, ME 04469-5766, (207) 581-1677.
E-MAIL: thomas.j.drake@maine.edu

Institutional Research and Assessment: Debra Allen, Assistant Provost, 5703 Alumni Hall, Room 107A, Orono, ME 04469-5703, (207) 581-1415.

E-MAIL: debra.allen@maine.edu

International Programs: Orlina Boteva, Director, 5775 Stodder Hall, Room 300, Orono, ME 04469-5727, (207) 581-1509.

E-MAIL: UMINTPRG@maine.edu

Maine Agricultural and Forest Experiment Station: Diane Rowland, Director, 5782 Winslow Hall, Room 105, Orono, ME 04469-5782, (207) 581-3202.
E-MAIL: diane.rowland@maine.edu

Margaret Chase Smith Center for Public Policy: Jonathan Rubin, Director, Building 4, York Complex, Orono, ME 04469-5715, (207) 581-1528.
E-MAIL: rubinj@maine.edu

Multicultural Student Life: Anila Karunakar, Director, 5748 Memorial Union, Room 312, Orono, ME 04469-5748, (207) 581-1437.
E-MAIL: anila.karunakar@maine.edu

Native American Program: Darren Ranco, Director, 5717 Corbett Hall Room 208, 5724 Dunn Hall Room, Orono, ME 04469-5706, (207) 581-4450.
E-MAIL: darren.ranco@maine.edu

Peace and Reconciliation Studies: Ian Mette, Coordinator, 5749 Merrill Hall, Room 118B, Orono, ME 04469-5749, (207) 581-3118.

E-MAIL: ian.mette@maine.edu

Policy and Security Services: William Flagg, Chief of Police and Security Services, Rangeley Road, Orono, ME 04469, (207) 581-4050.

E-MAIL: william.flagg@maine.edu

Research Compliance: Amanda Ashe, Director, 5703 Alumni Hall, Room 310, Orono, ME 04469-5717, (207) 581-1480.

E-MAIL: amanda.l.ashe@maine.edu

Research Administration: Christopher Boynton, Director, 5717 Corbett Hall, Room 410, Orono, ME 04469-5717, (207) 581-1472.

E-MAIL: christopher.boynton@maine.edu

Safety Management: Scott Wilkerson, Co-Director, York Village, Building 7 Orono, ME 04469, (207) 581-3049, Lisa Burton, Co-Director, York Village, Building 7, Orono, ME 04469, (207) 581-4058

E-MAIL: scott.wilkerson@maine.edu, lisa.burton@maine.edu

Student Financial Aid: Connie L. Smith, Director, 5781 Wingate Hall, Orono, ME 04469-5781, (207) 581-1371.

E-MAIL: csmith@maine.edu

Student Health Services: Richard C. Young, Executive Director, 5721 Cutler Health Center, Orono, ME 04469-5721, (207) 581-4010.

E-MAIL: ryoung@maine.edu

Student Records: W. Sam Carrell, Registrar, 5781 Wingate Hall, Room 208, (207) 581-1293

E-MAIL: william.carrell@maine.edu

Summer University and Winter Term: Hannah Carter, 5703 Alumni Hall, Suite 201, Orono, ME 04469-5703, (207) 581-1547

E-Mail: hannah.carter@maine.edu

UMAINE Online: Richard Roberts, Executive Director, 5713 Chadbourne Hall, Room 100, , Orono, ME 04469-5713, (207) 581-3161.

E-MAIL: richard.roberts@maine.edu

University of Maine Foundation: Jeffrey N. Mills, President and Chief Executive Officer, 2 Alumni Place, Buchanan Alumni House, Orono, ME 04469, (207) 581-5100, 1-800-982-8503.

E-MAIL: jeffmills@maine.edu.

University of Maine Pulp and Paper Foundation: Carrie Enos, President, 5737 Jenness Hall, Room 217, Orono, ME 04469-5737,(207) 581-2297.

E-MAIL: carrie.enos@maine.edu

Wabanaki Center: John B. Mitchell, Outreach and Student Development Coordinator, 5717 Corbett Hall, Room 208, Orono, ME 04469-5717, (207) 581-5717.

E-MAIL: john.b.mitchell@maine.edu

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- 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, mailing address, e-mail address, 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), and grade level. Students can indicate that their directory information not be released at any time while they are an enrolled student at the University.